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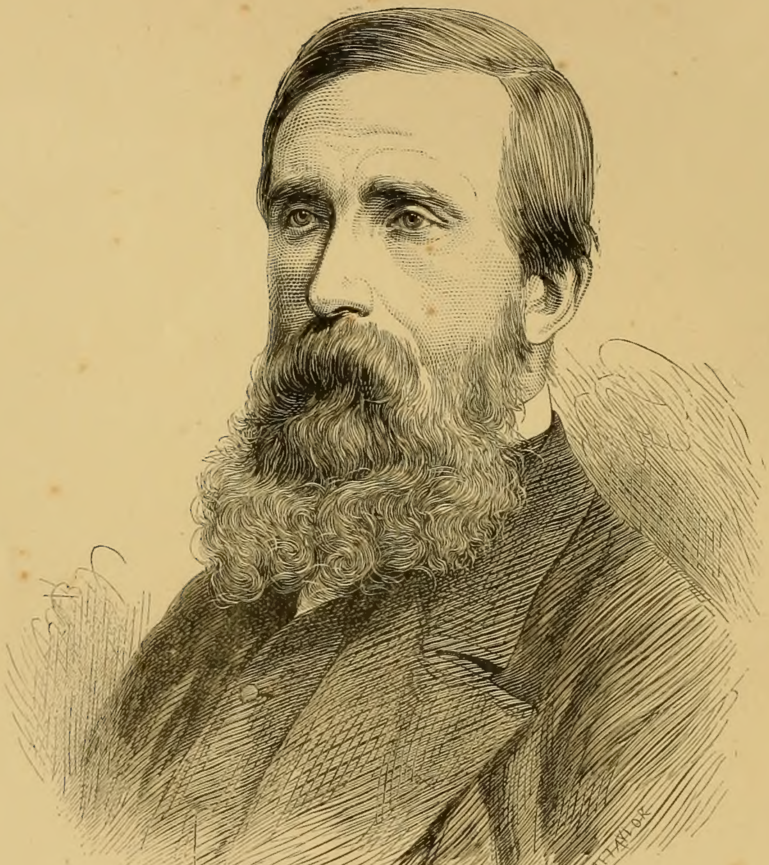

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AN

ILLUSTRATED WEEKLY JOURNAL

OF

HORTICULTURE IN ALL ITS BRANCHES.

FOUNDED

W. Robinson, F.L.S., Author of "Alpine Flowers," etc.

> "You see, sweet maid, we marry
> A gentle scion to the wildest stock;
> And make conceive a bark of baser kind
> By bud of nobler race: This is an art
> Which does mend nature; change it rather:
> The art itself is nature."—*Shakespeare.*

VOL. XIV:—CHRISTMAS, 1878.

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OFFICE: 37, SOUTHAMPTON STREET, COVENT GARDEN, W.C.

TO

GEORGE MAW, F.L.S.,

Of Benthall Hall, Broseley, Salop,

THIS FOURTEENTH VOLUME OF "THE GARDEN" IS DEDICATED

IN RECOGNITION OF HIS LABOURS TOWARDS ENRICHING THE FLORA

OF BRITISH GARDENS:

W. R.

C
Per
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1878 v. 14

MASSACHUSETTS AGRICULTURAL COLLEGE

INDEX TO VOLUME XIV.

A.

Abelia rupestris, 125
Absurdities, Horticultural, 570
Abutilon Anna Crozy, 466; igneum, 474, 513; insigne, 513; in winter, 557
Acacias, dealbata, 170, 190, 323; Decaisneana, 407; melanoxylon, 190; as window plants, 454; culture of, 329
Acacia, the Rose, as a standard, 154
Acanthuses in shade, 244
Acers, 77; Wagneri laciniatum, 131; Schwedleeri, 213
Achimenes, 162; wintering, 385
Acorus Calamus, 150
Acrostichum peltatum, 499
Actæa racemosa, 264
Adiantum caudatum, 87; Capillus-Veneris on walls, 549; Farleyense, 254; ditto, on water-tanks, 544; Hendersoni, 257, 511; palmatum, 525; Edgeworthi, 555
Adlumia cirrhosa, 106
Aërides Lobbi Ainsworthi, 147
Agapanthus minor Mooreanus, 305; the double, 78; umbellatus, out-of-doors, 191; in Wigtonshire, 199
Ageratum Imperial Blue, 141
Ageratums as annuals, 6
Ailantus as a standard, 391
Alders, the, 437
Alisma sinensis, 169
Allamanda, culture of the, 396
Alocasia Jenningsi, 101
Aloe; American, in flower, 169; wintering American, 454
Alpine Poppies, 124
Alstrœmerias in wild garden, 3
Althæas in London, 199
Alyssum, variegated rock, 416
Amaryllidaceæ, new key to, 332
Amaryllis, Mrs. Rawson, 332; O'Brieni delicata, 191; Prince Teck, 332
Amaryllises and their treatment, 48
America, notes from, 452
American Aloe in flower, 169
American Cork, 130
American Elm, variegated, 121
American Star Grass, 54
Ampelopsis Veitchi, 415; how to grow, 462
Anæctochili, 112; culture of, 492
Anchusa incarnata, 191
Androsace sarmentosa, 102
Anemone, Honorine Jobert, propagating, 355; japonica, 408; white and rose-coloured, 345
Anemones from seed, 75
Anemones, Phloxes, and Begonias, 190
Anemonopsis macrophylla, 3
Anemidictyon Phyllitidis tesselata, 567
Annuals as bedding plants, 5; Ageratums as, 6; new, 93
Anthers of flowers, 114
Anthonomus pomorum, 491
Anthomyia ceparum, 347
Anthurium Scherzerianum in winter, 411; album, 364; variety of, 465
Antirrhinums, 28; in poor soils, 288; dwarf, at Tottenham, 213
Ants in Grass, 98
Aphelandras, varieties of, 222
Apios tuberosa, 234
Aponogeton spathaceum, 8; distachyon, 149; ditto in small aquaria, 555
Apples, early, 120; crops of in Kent, 344; Devonshire Queen, 261; mildew on, 119; origin of, 10; Redleaf Russet, 278; the cultivated, 10; the wild Balsam, 303; Warner's King, 261; Worcester Pearmain, 279; and Pears best bearing, 118; classification of, 91; for northern districts, 380, 419; gathering, 260; in June, 156; notes on, 380, 584; pruning cordon, 209; Russian, 120; Dr. Hobb, 574
Apple trees, blight on, 143
Apple-tree-boring caterpillars, 297
Apricots, nailing, 89; treatment of in autumn, 167
Aquaria, fresh water, 245
Aquatic plants, hardy, 102, 192
Aquilegias and their culture, 1; hybrid, 1; cœrulea hybrida, 563
Aralia Sieboldi, 62, 374; in flower, 454; spinosa, 580
Arboretum, Kew, 3
Arbutus Andrachne, 190, 231; Menziesi, 154, 210; ditto and procera, 170, 210
Arbutuses from seed, 477
Argemone hispida, 235
Aristolochia altissima, 125; trilobata, 390
Armerias, dwarf Alpine, 266
Arrowhead, 150
Artichoke, Jerusalem, 75; and rabbits, 501, 526
Arum italicum in Cornwall, 141; the bog, 149
Arums at Kew, 125; tropical, long roots of, 362
Aruncus sylvestris, 302
Arundo conspicua, 152, 235; mauritanica, 217
Ash, Mountain, an avenue of, 350
Asparagus, beetle, 275: beds, 429; making ditto, 231; culture at Argenteuil, 294; at Chester, 132; ditto, improved, 457; Couch Grass in beds of, 143; and salt, 530, 570
Asparagus decumbens, 478; failure of, 204; from seed without transplanting, 251; in July, 3; removing the seed from, 458; all the year round, 569
Aspidium crinitum, 384
Aspidistra lurida variegata, 243
Asplenium nobile, 478
Aster Amellus, 451; Curtisi, 345; Novæ-Belgii var. minimus, 280; grandiflorus for the conservatory, 451; select, 562
Astragalus adsurgens, 310
Atraphaxis spinosa, 389
Auriculas, 398; in September, 219
Avens, double scarlet, 562
Avenue trees, 104; two good, 172
Azaleas, 113; Duke of Edinburgh, 221; and Camellias from seed, 1; hardy, autumn tints in, 428, 441; re-potting, 385; white, in the open air, 430, 498, 454, 510, 534
Azaras, select, 350

B.

Balaninus nucum, 318
Balsams, annual, 323; at Forest Hill, 125; Indian, 234; in pots, 395; out-of-doors, 395
Balm of Gilead, 164
Bamboo mats, 482, 549, 570
Bamboos at Tottenham, 366; for conservatories, 146
Bambusa Ragamowski, 170
Bananas at Wimbledon House, 451; in Covent Garden, 301
Barberry, Coral-bearing, 78
Basket plants, Begonias as, 30, 100; Othonna crassifolia as, 76
Battersea Park, gardening in, 176
Bean, Canadian Wonder, for forcing, 397, 429, 454
Beans, French, and Scarlet Runners, 458, 569
Beaucarnea recurvifolia, 436
Bedding, carpet, merits of, 4; with hardy plants, 76; Lobelias for, 65; Pelargoniums for, 176; summer and winter combined, 460
Bedding plants, annuals as, 5; propagating, 111, 552; yellow, 105; Tropæolums as, 6
Bed straws, 28
Bee plant, Pentstemon as a, 133
Beech trees and underwood, 510, 534, 571, 579
Beet, Dell's black-leaved, 423
Beetles, Mushroom-eating, 231
Begonia, a new, 169; Chiswick Blush, 144; Frœbeli in winter, 389; geranioides, 276; Louis Thibaut, 276; Mrs. Dr. Todd, 144; Mrs. A. Potts, 191; Nellie May, 276; polypetala, 531; Queen of the Whites, 213, 302; Roezli, 436; Weltoniensis, 347; Saundersi, 567
Begonias at M. Lemoine's, 189; as basket plants, 30, 100; for the conservatory, 211; Mr. Laing's, 212; new hybrid, 436; and Phloxes and Anemones, 190; planted out, 58; seedling, 101; flower-shedding in, 75; tuberous rooted, 101, 392; propagating, 467, 573, 586; of 1878, 503
Berberis pallida, 104
Berberries for wine, 120
Berberidopsis corallina, 78
Berkeley Portrait, 389
Berry-bearing plants, 101
Biennials, Helichrysums as, 106
Bignonia erecta, 169; capreotata, hardy, 305; venusta, 478
Billardiera longiflora, hardy, 100
Bindweed, a pretty, 3; the great, 78; eradicating, 143, 165, 187, 430
Birch, purple-leaved, 172
Birch wood, a, 348
Blackberries, 242
Blackheath, improvements at, 172
Blight, 143
Blue Gum Tree, 187, 190 (see Eucalyptus)
Boiler, Gold Medal, 459; French, and pipes for heating, 340
Bomarea Carderi, 364
Borders, Thalictrums in, 12
Boronia serrulata, propagating, 399
Botanical discovery, 102
Botanic Gardens, Regent's Park, barriers at, 3
Botanic Garden, Glasgow, 166
Botany, garden, 81, 114, 159, 182
Bougainvillea glabra, flowering of, 244
Bouquets, Roses in, 48, 75; French, 101; English and foreign, 145
Bouvardia angustifolia, 191; triphylla, 235
Bouvardias at Christmas, 360; at St. John's Wood, 478; cool grown, 465, 483; for the flower garden, 331; in market gardens, 522; planting out in summer, 412, 506; propagating, 267; warm treatment of, 436; winter-flowering, 543
Box edgings, 164; planting, 408
Box, the Golden Japanese, 169
Boxhill, Roses at, 28
Bramble, double-flowered, 147
Bridge, rustic, without nails, 474; the new Regent's Park, 187
Briers, propagating, 319
British Orchids, 25
Broccoli, autumn, 445; Veitch's Autumn Self-protecting, 457, 570
Broussa and Mount Olympus, 27
Brownea erecta var. princeps, 235
Browallia elata in winter, 574
Brugmansia, large, 451; as a tub plant, 272
Bryonia divica in the garden, 389
Buckbean, the, 150
Budding Roses, 13
Buddleia globosa, 101; insignis, 349
Buildings, ancient, 548
Bulbs and tubers, wintering, 322 369, 509
Bulbous plants, exotic, 101
Bullace, a prolific, 323, 435, 521
Burdock exterminator, a, 229
Burgundy, Vine pest in, 125
Burial grounds, St. Lukes, 15
Burning Bush, 2
Burnt earth for potting, 544
Butomus umbellatus, 150
Buttercups, double, 305; double and semi-double, 285; eradicating, 253
Butterfly, Cabbage, 94; Turnip, 107

C.

Cabbage butterfly, 94
Cabbages, clubbing in, 254; crowbar-planted, 207, 252; for early use, 342; when to plant, 131, 248; when to sow, 67, 131
Cacti, free-flowering, 185
Caladium argyrites, 411
Calanthe Sedeni, 475; Turneri, 549
Calanthes in flower in small pans, 410, 586
Calandrina nitida, 101
Calceolaria crenatiflora, 94
Calceolarias, herbaceous, 113; shrubby, propagating, 318; wintering bedding, 524
Calendula officinalis, 285
Californian Dicentras at home, 177
Callas in trenches, 414; planting out, 14, 463, 498, 509; ditto, in water, 432
Calystegia sylvatica, 507
Camellias and Azaleas from seed, 1; and Roses, 316; and Euryas, 323; American, 500; group of new, 354; treatment of, 66; watering, 484; ditto and thinning, 512
Campanulas, culture of, 141
Campanula nobilis, 28, 54; pyramidalis, 14; pumila alba, 94
Canna iridiflora, 323; iridiflora hybrida, 235
Cannas, culture of, 537, 583; in Ireland, 346; propagation of, 537; with Gladioli, 539
Cape Gooseberry out-of-doors, 123
Cape Pondweed, 149
Capsicum Prince of Wales, 530, 570
Cardiff Castle, Melons at, 74
Carnation and Picotee Society, 96
Carnation Souvenir de la Malmaison, 165, 221, 341
Carnations, 55; culture of, 121; disfiguring, 142; dressing, 145; exhibition, 106, 191; propagating, 111; removing, 165; seedling, 93; two good, 221; tree, 525; yellow, and insects, 75; and Picotees, 336, 414; do., yellow, 580; perpetual, planted out, 524; ditto at St. John's Wood, 301; at Slough, 574
Carpet bedding, merits of, 4; plants for, 265
Carpocapsa pomonana, 391
Carrots for main crops, 295
Cascades in pleasure grounds, 65
Cassia corymbosa, 88; out-of-doors, 279, 348
Castanea chrysophylla, 77
Castings, elaborate, 489
Casuarina sumatrana, 396, 544; ericoides, 556
Catalpa for economic planting, 19; fruit of the, 301
Catchfly, Sickle-leaved, 529
Caterpillars and Dill, 276; and Oak, 107; Apple tree boring, 297

Cattleya, a new, 147; crispa, 87; Eldorado var. 213; Leopoldi, 101; Mitchelli, 188; Veitchiana, 188
Cattleyas, treatment of, 492
Caucassian Scabious, 125
Cauliflower, Autumn Giant, 143, 336, 458, 187
Cauliflowers, autumn-planted, 342, 423; early, 33, pricking out, 295; Sutton's King of the, 386
Ceanothus Arnoldi, 55; azureus, 301, 510; Gloire de Versailles, 109; velutinus, 172
Cedars at Gunnersbury, 105; at Lebanon, 580
Cedrus Deodara, 170; cones of, 209
Celery, 182; earthing, 209; free from worms, 530; maggots, 341; worm-eaten, 363; running to seed, 363; and Scarlet Runners, 67
Celosias, 88
Celosia pyramidalis in the conservatory, 549
Centaurea macrocephale, 55
Centropogon Lucyanus, 576
Cerasus Watereriana, 572
Cereus serpentinus, 134
Cestrum aurantiacum, 466
Cetonia aurea, 428
Chalk herbaceous plants on, 177
Chamærops excelsa in flower, 367
Charring weeds, 15
Chelsea, Pitcher Plants at, 55; Orchids at, 549
Cherry Plum as a hedge plant, 430
Cherry, Morello, the, 222; fruit falling off ditto, 501; black fly on the, 526, 550
Cherries in Rhenish Bavaria, 196
Chervil, curled, 295
Cheshunt, Roses at, 123
Chestnut, golden-leaved, 77; Sports, 241
Chestnuts, sweet, 405
Chiswick, rockwork at, 235
Chlora perfoliata grandiflora, 396
Chorozemas, culture of 556
Christmas decorations, 551
Christmas Roses, 178
Chrysanthemum, frutescens aureum, 235; M. Crousse, 475
Chrysanthemums, Anemone-flowered, 375; at Isleworth, 436; at St. John's Wood, 390; exhibition, 483, 544; in a cut state, 514; in pots, 375; in the Temple Gardens, 411; feeding and disbudding, 194; Japanese, 156, 500; potting, 14; protecting in windy weather, 265; show of, at the Aquarium, 475; at Liverpool, 521; summer-flowering, 99; tortured, 481
Chusan Palm, New England, 31
Churches, floral decoration in, 373
Churchyards, flowers in, 105, 152; plants for, 146
Cinerarias, culture of, 224
Cineraria maritima, 254; from seed, 289, 330, 399
Classification of Apples, 81
Clay, burnt, 477
Clematis, Henryi, 213; lanuginosa, 101; Pitcheri, 213, 463
Clematises, utilisation of, 370; in mixed beds, 331; and Ivy, 100; on trees, 552
Clethra paniculata, 169
Clianthus punicens, 510; Dampieri, 101
Climate of north of France, 545
Climbers, conservatory, at Birmingham, 396; greenhouse, winter-blooming, 363, 385; regulating conservatory, 434; stove, 555
Climbing Roses and Holly, 56
Cloches, price of, 458, 502
Clove Carnation, Miss Askey, 234, 301
Cluster Pine, 20
Cobæa scandens variegata, 201
Cockscombs, large, 279, 323, 373
Cocoa-nut fibre, mulching with, 539
Coffee, Liberian, 250
Coffee tree, Kentucky, 77, 240
Colchester, plants in flower at (July 27), 78
Colchicums at Tooting, 279
Colchicum speciosum, 289
Coleuses, new, 345; propagating, 547
Collecting plants, notes on, 85
Collector's outfit, 85
Coloured-leaved trees, 77
Columbian Orchids, 125
Combination, a pretty, 485
Comfrey variegated, 191
Compass plants, 55
Composition, binding, 586
Conifers at Preston Show, 76; Golden, 103, 124; in towns, 321; notes on, 240; pruning, 256; variations in, 441
Conservatory, Begonias for the, 211
Convovulus althæoides, 3; sepium, 78
Cœlogyne Hookeriana, 390
Cool Orchids. Columbian, 125
Cordyline indivisa from seed, 244
Coreopsis medata, 190
Cork, American, 130
Corn, green, for the table, 430
Correas propagating, 13
Corydalis lutea, 301
Cotoneasters in masses, 322
Cottagers' Kale, 38
Cotton Thistles, 28
Covent Garden, bouquets in, 396; Grapes in, 166; improvement in, 295
Crane fly, 131
Cranberry culture in England, 435
Crassula lactea, 577
Creepers for training over doors and windows, 265
Crinum Mackenni, 101
Crocosmia and Sparaxis, 429
Crocus Elwesi, 345; vitellinus, 420
Crocuses, winter and early spring, 420; autumn, 305
Crœsia Bergmanniana, 259
Crops, Peach, 76; Potato, Ireland, 76; market, 424; fruit, 28, 38, 71
Croton Prince of Wales, 55, 543; Williamsi, 188
Crotons at Anerley, 411; at Holloway, 367
Crowfoot, the water, 151
Cucumbers, 163, 181; and woodlice, 98; bitter, 250; diseased, 143; in the East, 252; ridge, 164; winter, 32; new v. old seeds of, 342; Telegraph, 397, 530
Cuphea Zampari, 389
Cupressus Lawsoniana, propagating, 157
Cure for Rats, 48
Currants, losing their bloom buds, 550, 573; standard, 325, 344, 382; summer pruning, 167
Cuttings, Rose, 57; striking, 181; Ossenkoss method of ditto, 223; new mode of ditto, 515
Cycas revoluta in fruit, 525
Cyclamen Mount Blanc, 475
Cyclamens, 181; at Reading, 323; planted out, 372; sweet-scented, 257
Cymbidium Parishi, 28
Cyperus longus, 213
Cyphokentia macrocarpa, 345
Cypripediums, 112; hardy, 59
Cypripedium insigne in cold pits, 322
Cypress, a fine-leaved, 172
Cyprus, vegetation of, 140

D.

Daddy-long-legs, 131
Dahlia Aurora, 276; Clara, 276; Ellen Macgregor, 188; imperialis, 525; Joseph Ashby, 276; Little Beauty, 235; lutea, 276; Paragon, 276; Prince Bismarck, 188; species of, 124
Dahlias on Grass, 323; Pompone, bouquet of, 218; single, 102, 169, 257; various, 276
Daisy, a sky-blue, 55
Daisies, Michaelmas, 562; on walls, 257
Daphnes, Alpine, 389; of China and Japan, 442
Daphne Blagayana, 200, 212; propagating ditto, 330; indica, 66; rupestris, 301
Datisca cannabina, 257
Deathless flower, the, 12
Decorations, table, 3, 25, 50, 53, 97, 145; wild flowers in, 67; at Charing Cross, 76
Deherainea smaragdina, 531
Dell in Hyde Park, 78
Delphinium cardinale, 65, 147; Victory, 235; George Taylor, 55
Delphiniums, perennial, 87; double, 87; from seed, 106; single, 87
Dendrobium, a new, 55; barbatulum grandiflorum, 55; bigibbum at Chelsea, 345; bigibbum album, 500; d'Albertisi, 55, 144; nobile, culture of, 289; Goldiei, 244
Desfontainea spinosa, 147, 190
Desmodium penduliflorum for the conservatory, 323
Desmodium racemosum in September, 257
Destroying slugs, 21
Diary, extracts from, 15, 38, 67, 89, 114, 138, 164, 182, 204, 226, 248, 269, 292, 313, 339, 358, 379, 402, 423, 445, 494, 518, 542
Dianthuses as bedding plants, 257
Dianthus Heddewigi, 6
Dicentras, Californian, at home, 177
Dicentra eximia, 100; formosa, 451; Rue-leaved, 95; thalictrifolia, 95
Dictamnus Fraxinella, 2
Digitalis gloxinoides, 7
Digging, best spades for, 570
Dill and caterpillars, 276
Dioscorea retusa, 138
Diospyros lucida, 282
Dipladenia boliviensis in winter, 478
Dipladenias, finely-flowered, 367; at Holloway, 85
Disa grandiflora, culture of, 99; in the open air, 497
Dog's-tooth Violet, 177
Double Agapanthus, 78; Edelweiss, 50; flowers, 9, Wistaria, 105; Zinnias, 191; zonal Pelargoniums, 2
Dracæna Frederici, 436
Dracænas at Anerley, 411; striped-leaved, 28
Dracophyllum lusitanicum, 126
Drought in the Eastern Counties, 73
Drying everlastings, 98; herbs, 89
Duration of flowers, 10
Dye plants, 28, 75
Dynamite and tree roots, 534

E.

Early Cauliflowers, 33
Earings, 253
Eastern counties, drought in, 78; Japanese Primroses out-of-doors in, 539
Echeveria De Swetiana, 436; winter quarters for, 498
Economic planting, Catalpa for, 19
Edgings, Box, 164; brick, 509
Edelweiss, 100; a double, 50
Edwardsia, grandiflora, 510
Elder, red-berried shedding of, 363, 429,
Elder, 476, 533
Elm, the Western Rock, 131
Elms in Kensington Gardens, 441; 428
Elymus glaucus, 125
Endive, good, 33, 163; sowing, 38; late-sown, 295; blanching, 408
England and Wales, handbook of, 166
Everlastings, drying, 98
Exhibition Chrysanthemums, 544
Epacrises, propagating, 374; scale on, 476
Epidendrums, 36
Epidendrum vitellinum, 2
Epilobium hirsutum, var., 217; obcordatum, 2, 253
Epiphyllums on pillars, 478
Epiphyllum truncatum, varieties of, 134
Eragrostis elegans in pots, 87
Erica cerinthoides coronata, 186
Erodiums, 454
Erodium pelargonifolium, 368, 430
Eryngium Bromeliæfolium, 195
Erythræa Muhlenbergi, 217
Erythronium americanum, runners of, 92, 177
Escallonias, 3
Escallonia Phillipiana, 103
Eucharis amazonica, 162, 195, 244; in market gardens, 568
Eucalyptus globulus, 190, 236, 336, 408, 441; about London, 427; in Cornwall, 282; in Surrey, 572; high, 580
Eucomis, species of, 258
Eugenia apiculata, 172; in Ireland, 125
Eulalia japonica, 78, 94, 141, 262; japonica zebrina, 212, 276
Euonymus latifolius, 256
Eupatoriums gracile, 87; ligustrinum, 389; riparium, 87
Eupatoriums, propagating, 87
Euphorbias, Alpine, 305
Euryas and Camellias, 323
Evening Primroses, 3
Evergreens, cutting down, 319, 341, 386; light-coloured, 143, 165, 171
Everlastings, drying, 98
Exhibition Chrysanthemums, 544; Ferns, 75; International Japanese plants, 76; Plumbago capensis for, 78; Roses for, 75; plants for, 21
Exotic bulbous plants, 101
Experimental garden, 125

F.

Fairy rings, 143
Fancy Pansies, good, 78
Fern, violet-scented, 110
Ferns, basket for, 484; culture of, 225; for a conservatory, 476, 483, 550, 586; for exhibition, 75; hardy, for rockeries, 537; treatment of, 37; Filmy, and their culture, 30; in the Tyrol, 567; bouquet, 573; winter coverings for, 586
Fernery, hardy, 66
Ferneries, slugs in, 187
Ferula glauca and communis, 62
Festuca punctoria, 354
Fete, Botanic Societies, 22
Figs in pots, 48, 98, 163; Argenteuil, 261; Osborn's Prolific, 167; and their culture, 584
Filbert, the bronze-leaved, 105
Filberts, culture of, 275; grown at Chiswick, 154; preserving, 319, 363
Filmy Ferns, 30
Firs, Scotch, and Spruce, 363
Fir trees, Honeysuckles on 485
Flag, the Sweet, 150
Flax, New Zealand, in Scotland, 176
Floral decoration in churches, 373
Florist flowers, dressing, 231; in London, 55
Flower beds, dwarf Lilies for, 90; near Westminster Abbey, 279
Flower garden, a pretty combination in the, 285
Flower gardening at Lambton, 265; at Battersea Park, 176; in Hyde Park, 152; Antirrhinums for, 6; Lantanas for, 6; Petunias for, 6; Rhodanthes for, 6; formal, 90
Flower-pot, Japanese, 175
Flower show at Versailles, 209
Flower, the Deathless, 12
Flowers, Alpine, 434; anthers of, 114; autumn, in Hertfordshire, 461; border, October blooming, 345; calyx of, 34; double, 9; duration of, 10; exhibiting wild, 278; dressing florist, 231; florist, in London, 55; for churchyards, 105, 152; for cutting in winter, 166; hardy, at Tottenham, 213; hardy October, 394; language of, 13; outdoor, November, 411; open-air in December, 525; of Grasses, 81; preserving, 175; pistils of, 159; scarlet, among Grass, 539; showy hardy, 235; size of, 9; stamens of, 115; stigma of, 162; styles of, 162; sugar in the nectar of, 317; colours of, 63; their origin, 63; perfumes of, 10, 63; their shape, 63; Veronicas for cutting, 186; warm exposures for, 230; winter, 143
Flowering Rush, the, 169
Forcing, by smoke, 172; French Beans, 529; preparations for, 418; flowers, 540
Forficula auricularia, 230
Forget-me-nots in marshes, 62
Forestry, ornamental, 532
Forest, a Trinidad, 340
Forest work for September, 256; for October, 309, 350; for November, 407
Fountains, garden, 98; in pleasure grounds, 65
Foxgloves, tall, 177, 200; varieties of, 7; and Rhododendrons, 7
Frames, heated, 187; and their uses, 576
Frame protectors, 577
France, climate of the north of, 520; common Rhubarb in, 538; Rose growing in, 334, 355, 383, 402
Francoa ramosa, 341
French Beans, forcing, 529; bouquets, 101
Fremontia californica, 144
Freesia refracta alba, 23
Freycinetia Banksi, 359
Fruit bushes, pruning, 471; 553
Fruit crops, the, 28, 38, 71; ditto, "Punch" on, 118; in Caithness, 119; in Worcester, 119
Fruit at the Paris Exhibition, 215, 382; damage done by wasps to, 229; drying hardy in Georgia, 327; at Sawbridgeworth, 325; in Italy, 118; hardy, 67, 163; culture of, 476; in California, 545; helps in harvesting, 118; at the Crystal Palace, 297; storing, 308; ditto, in malt dust, 382; tinned, danger of, 132; preserving soft, 584
Fruit rooms, absorbents for, 344; shelves for, 408
Fruit trees, avenues of, 344; borders for, 221; fast budding of, 451; fastening labels on, 546; in autumn, 499, 521, 546, ; on walls, 429; root-pruning, 519; select, 385; summer pruning, 120; steel brushes for, 519; training pyramid, 327; twice transplanted, 196; watering, 81; wood of, ripened by root-pruning, 418; pruning bush, 343; from Australia, 279; warm exposures for, 230; want of, 584
Fuchsia aucubœfolia, 108; microphylla, 94; pumila, 498; the first white, 253; species of, 367; dwarf, 416, 463
Fuchsias, more about, 539; undergrowth for, 394; as bedding plants, 394; amongst Ivy, 321, 346, 372, 416; for exhibition, 374; for open-air culture, 281, 305, 372, 462; on bottom heat out-of-doors, 434; in and out-of doors, 463
Fumitory, the climbing, 106
Fungus foray, Woolhope Club, 279

G.

Galatella cana, 323
Gales, destructive, in Ireland, 257
Galiums, 28
Gardenias, 180; culture of, 490; propagation of, 480; in market gardens, 568
Garden Botany, 8, 34, 68, 81, 114, 138, 159, 182, 206, 226, 249, 270, 292
Garden covered way, 56
Garden, an Alpine, in Vienna, 431
Garden under glass, 478
Garden, art in the, 451
Garden, an experimental, 125, 183
Garden, a Thames-side, 126
Garden fountains, 98
Garden, plants for the wild, 127
Garden schools, Marlborough, 130
Garden, the Viceregal, 125
Garden, the wild, in America, 248; in Moravia, 551
Gardens, Kew, 3; Kew, Defence Association, 101; Kew, report on, 122; Kew, opening of, 162; Glasgow Botanic, 166; Heckfield Place, 169; ornamental, Rochester, 107; picturesque, 473
Gardening, formal flower, 90; geograpical, at Munich, 340; Japanese, 174; ditto, Lamport Hall, 189; London market, 4·9, 418; landscape, 87; in Battersea Park, 176; in Green Park, 147; Hyde Park, 152; in Greece, 251; in India, 287; in Victoria Park, 211; in the Parks, 5; spring, 152; town, 408
Gardeners' market waggons, 116
Gardeners' Royal Benevolent Institution, 2
Garrya elliptica, 253
Gaultheria procumbens, 368
Gentiana asclepiadea in autumn, 257
Genoma gracilis, 436; Seemanni, 389
Geranium sylvaticum, 28
Germany, winter Radishes in, 530
Gesneras, 162
Gesneraceous roots, storing of, 134
Geum coccineum, fl.-pl., 16, 562
Geums, select, 562
Gladiolus Colvillei, 12; gorgonius, 144; Herois, 144; Tetamon, 144; Saundersi, 101; autumn-planting, 413, 460, 504; English-raised, 277; French-raised, 277; mulching, 66; wintering out-of-doors, 354, 460, 553; with Cannas, 539
Glanville's Wootton, 192
Glasgow Botanic Gardens, 166
Glass houses, double roofs for, 340
Glazing, double, 347; Rendle's system of, 585
Gloxinia bulbs storing, 195
Gloxinias, propagating, 65; wintering, 385
Golden Conifers, 103, 124; Feather, 6; Japanese Box, 169; Chestnut, 77; Retinospora, 31
Goold's chemical compounds, 546
Gooseberry, the Cape, outdoors, 123
Gooseberries, standard, 325, 344, 382
Grape, Alnwick Seedling, 301, 408, 476; Black Hamburgh, 524; ditto as a late, 405, 553, 584; Madresfield Court, 132; Pearson's Golden Queen, 435, 558; the Catawba, 454; the Sultana, 278; mildew, 143; Vines at Fulham; Chasselas, 341
Grapes, diseased, 165; from Nottinghamshire, 344; in Covent Garden, 166; in a warm greenhouse, 363; new, 472; non-fertilization of, 165; on open walls, 81; prizes for new, 323; shy setting, management of, 241; two kinds of, on one Vine, 550; without fire-heat, 343, 472, 521; in bottles of water, 584
Grass, ants in, 98; in Hyde Park, 125; St. James's Park, 179; a fine, 152; scarlet flowers among, 539; the American Star, 54; the Lyme, 124; Water Lilies on, 539; couch in Asparagus, 143; Pampas, transplanting, 187; flowers of, 81
Greenhouse, how to heat a, 296, 476; ditto, a small, 466, 501
Greenhouse plants at Kew, 126; in small pots, 14
Greenlands, Henley-on-Thames, 126
Grevillea robusta from seed, 214
Griffinia Blumenavia, 257
Griffinia hyacinthina, 257
Grounds, burial, St. Luke's, 15
Grouping Oaks in Parks, 534
Grubs and Pansies, 165
Gryllotalpa vulgaris, 287
Gumming in Plums, 121
Gum Tree, the Blue, 187, 190
Gunnersbury, Cedars at, 105
Gynerium argenteum nanum, 279
Gymocladus canadensis, 77

H.

Habranthus pratensis fulgens, 514
Haberlea rhodopensis, 389, 462
Hadena oleracea, 535
Haplophyllum palavinum, 125
Happy hours, 57
Hardiness of New Zealand plants, 93
Hardy flower garden plants, 539
Hardy aquatics, 94, 102, 192; Fernery, 66; fruit, 67; plants for carpet bedding, 76; plants, 95, 102, 148, 170, 192; at Kew, 126; at Colchester, 125; at Tooting, 100; costly, 91
Hardy red Water Lily, 55
Hardy shrubs, 95, 102, 170; at Kew, 126, 148
Hardy Water Lilies, 54; water plants, 149
Harvest, the, fruit helps in, 118
Hawthorns, pink, 21
Heath, the Sea, 100; white Irish, 147
Heaths, Cape, propagating, 374; shading, 78; treatment of, 112
Heated frames, 187
Heating a small greenhouse, 501; French boilers and pipes for, 340; lamp, 386, 477; pits, 187
Heckfield Place Gardens, 169
Hedges, clipping, 98
Hedysarum Mackenzii, 390
Helianthus multiflorus, 239; orgyalis in flower, 301; divaricatus, 452, 563
Helichrysums as biennials, 106
Helleborus, culture and propagation of, 179; altifolius in pots, 451; species of, 178
Hemerocallis Mittendorfiana, 3·5
Herbaceous plants at Huntingdon, 90; on chalk, 177; in 1878, 215
Herbs, drying, 89
Hexacentris mysorensis, culture of, 283
Hibiscus Manihot as a bedding plant, 353; palustris in flower, 302; the White Shrubby, 190
Hillfield, Reigate, 172
Holboellia (Stauntonia) latifolia, 3·9
Hollyhocks, 135; propagating, 156
Holly, Hodgin's 511
Holly and Roses, 56
Hollies, grafting, 429; in vases, 104; propagating, 289; berries, 572
Home travel, 197
Honeysuckle, the wild, 300
Honeysuckles in pots for forcing, 284; on trees, 485, 552, 579
Horticulture at the French Exhibition, 169, 179, 486, 587
Horticultural exhibitions, provincial, 230; international exhibition for 188·, 467
Hyacinthus candicans, 101
Hyacinth glasses, 219; the White Roman, 194, 577
Hyacinths in pots, beds, and glasses, 320
Hyde Park, beds in, 226; Dell in, 78; Gardening in, 152; Grass in, 125; Lilies in, 28
Hydrangea paniculata grandiflora, 172, 190
Hydrangeas in Ireland, 478; in pots, 477; two fine, 154; planted out, 579
Hypericum Coris, 429; species of, 238
Hylobius abietis, 121
Hylotoma rosarum, 215

I.

Icehouses, economic, 585
Icehouse floors, 501
Ilex scotica aurea, 475
Illuminations and trees, 169
Impatiens Jerdoniæ, 328, 377
Imported Orchids, 162
Indigofera tinctoria, 29
Indian Azaleas planted out, 544
Ink, indeliable, 347
Insecticide, paraffin oil as an, 310, 376, 391, 501, 526, 535
Insects, leaf-mining, 21; Rose, 13; on Carnations, 75
International Exhibition, 179; Japanese, plants at, 76
Inula candida, 490
Inopsidium acaule, 217
Ipomœa Horsfallia, 500; in small pots, 549
Ireland, Potato crops, 76; weather in, 554
Iris Alexander von Humboldt, 2; De Vreese, 2; Kempferi, varieties of, 2; pseudo-acorus, 151; Ruthenica, 62; Sieboldi, 2; new, 2; the Pigmy, 62; the water, 151; persica and reticulata, 557
Irises, 394; a group of hardy, 12; at Kew, 7; hardy, 12; in flower in July, 7; Spanish, 7; varieties of, 7; winter-flowering, 490
Irish Heath, the white, 147; Yews, 534
Irrigation near Paris, 16
Italy, fruit-growing in, 118
Ivy amongst Fuchsias, 321, 346, 372, 416, on rockwork, 283; growing in houses, 362, 373
Ivy and Clematises, 100
Ivy and Virginian Creeper on trees, 463
Ivy, autumn, 305
Ivies, mixed, 3

J.

Jacaranda mimosæfolia as a standard, 345
Japanese Maples, 31
Japanese plants at the International Exhibition, 76
Japanese Primroses out-of-doors in eastern counties, 529
Jasmine in London, 148
Jasminum nudiflorum aureo-variegatum, 256
Jerusalem Artichoke, 75
Jenny Spinner, 131

K.

Kaki, a full-grown, 175
Kale, cottagers', 38
Kew Arboretum, 3; Arums at, 125
Kew Gardens, 3, 95; Defence Association, 101; opening of, 162, 254, 276; report on, 122, Irises at, 7; notes from, 4, 26, 56, 214, 236, 258, 28·, 302, 324 346, 368, 388, 412, 452, 477, 524, 572; in December, 554
Kniphofia foliosa, 324
Kniphofias, propagating, 223

L.

Laburnum, scarcity of bloom, 104; in flower, 408
Lachenalia pallida, 389; pendula splendens, 574
Lady's-bedstraws, 28
Lady's-slippers, 112; hardy, 59
Ladybirds and green fly, 197
Lælias, 87
Lælia autumnalis, 500; anceps alba, 549, 574
Lambeth Palace Park, 130
Lamium striatum, 482, 526, 539
Landscape gardening, 87
Language of flowers, 13
Lantanas for the flower garden, 6
Lapageria alba as a pot plant, 78; rosea, 279; rosea superba, 345; out-of-doors, 385; varieties of, 376; flowering of the, 376; the white, 301
Lapagerias as standards, 451
Larkspurs, perennial, 87; select, 283
Lasiandra macrantha purpurea, 276; macrantha floribunda, 411
Lastrea aristata variegata, 334
Last of the giants, 153
Late Peas, 38; 530
Laurustinus, indoors, 549
Lavendula lanata, 539
Lavender, the Woolly, 539
Lawns on light soils, 210
Lawns, weeds on, 163
Laxenburg, 387
Layering Strawberries, 15
Leaf-mining Insects, 21
Leaves, autumn, 349; bleaching skeleton, 2·9; fungi on, 548; removing fallen, 391
Ledum latifolium, 240
Leeks, quick growth of, 339
Leeks, transplanting, 15
Lemon seeds, germination of, 254
Leptodactylon californicum, propagating, 467
Leptospermum bullatum hardy in Valencia, 31; lanigerum, 125
Lettuce, 163
Lettuce, Bossin Cabbage, 273; Foot's Green-fringed, 149; Jefferies' Little Queen, 252; Scott's Favourite, 143, 165; brown cos, 583
Lettuces, good, 149; notes about, 207
Leucojum roseum, 100
Libertia formosa, 12, 62

LIBRARY:—
Album Van Eeden, 19, 489
Brief, 78
Bulb Garden, the 122
Cookery, Handbook of, National Training School, 19

Library (*Continued*).
Cottages, Designs for, 133
Flora, British, Bentham's Book of, 192
Flora of the British Isles, 133
Flowers and Ferns of the United States, 122
Flowers, familiar Wild, 489
Holmes' Botanical Note Book, 19
Kew, Guide to, 19
Pine plantations in France, 133
Plant-lore of Shakespeare, 28
Wild Sports, the, and Natural History of the Highlands, 583

Ligustrum japonicum lucidum, 172
Lilac Charles the Tenth, 171
Lilacs from seed, 183
Lilium auratum, 253; in Lancashire, 233; a fine, 190; virginalis, 28; var. Emperor, 169; at home, 560
Lilium Batemanniæ, 147, 188; candidum, time of blooming of, 105; davuricum, 2; excelsum, 62; eximium, 238; Hansoni, 8, 26; longiflorum, second growth of, 146; neilgherrense, 345; speciosum out-of-doors; 238; new varieties of, 257; rubrum with white flowers, 5·9; superbum, 166
Lily, birth to death of, 60, 91, 257, 140
Lily bulbs, growth of, 177; cheap, 238; hints to importers of, 303; reproduction of, 61
Lily culture, 200, 216, 507; at Rochdale, 264; facts and fallacies in, 351
Lily growing, 393, 433, 461, 538; stem, abnormal, 78; the Swamp, 166; Victoria Regia in Regent's Park, 478; water, a red, 55, 78; the water, at Kensington, 191
Lilies, are they annuals, biennials, or perennials? 262; dividing, 121; dwarf for flower beds, 90; hardy water, 94; in pots, 354, 370; in the Isle of Wight, 212; lifting and replanting, 100; Orange, in Hyde Park, 28; planted out, 121; replanting, 91, 93; stem-roots of, 434, 460, 5·0; thinning, 21; top-dressing, 304; transplanting, 238, 286 305, 332, 354, 370, 393, 433; varieties of, 121; water, 54; white and rabbits, 166
Lime tree avenue, Torquay, 170
Lime tree, the, in towns, 309
Limes at Tor Abbey, 214
Linden tree, the, 130
Linum trigynum in winter, 511
Loasa volcanica, 147, 281, 302
Lobelia, a good white, 130; Emperor William, 191; fulgens, 394; in pots, 217; ilicifolia, 353; Lady Macdonald, 151; littoralis, 28; Omen, 55; speciosa 6
Lobelias for bedding, cool treatment of, 65
London, florist flowers in, 55; rookeries, 49
Lonicera fragrantissima, 329; Halleana, 267
Lophyrus pallidus, 559
Luculia gratissima, 478; on walls, 108
Lychnis coronata grandiflora, 345, 372
Lycopodium denticulatum, hardiness of, 509
Lycopods in the Tyrol, 567
Lyme Grass, the, 124

M.

Macleaya cordata, well grown, 302
Macrozamia cylindrica, 73
Magnolia grandiflora, injury to, 121; pruning, 476; Lenne, 322
Maize as a vegetable, 319
Malva crispa, 302
Mammillaria erecta, 395; longimamma, 329; sphacelata, 384
Mandevilla suaveolens, 275
Manures, Goold's artificial, 514, 557
Maples, Japanese, 31
Marigolds, treatment of, 66; as autumn border flowers, 233; dwarf, 354
Market gardeners' waggons, 116
Market Pears, 132
Market gardens, Roses in, 456; Gardenias, Eucharis amazonica, Stephanotis floribunda, and Tuberoses in, 563
Marl as a cultural agent, 559
Marshes, Forget-me-nots in, 62
Masdevallia, a finely-coloured, 147; velifera, 323, 474; culture of, 331
McNab, James, death of, 459
Meconopsis, species of, 280
Medlars, 408
Medinilla magnifica, 575
Meehan's American flowers, 446
Melanthium triquetrum, 368
Melolontha vulgaris, 197
Melon, Dell's Hybrid, 23; Dickson's Exquisite, 405; Netted Victory, 23

Vineries, ants in, 429
Vines, 89, 162; and liquid manure, 143; in pots, 363, mealy bugs on, 472; orchard house, 429; for table decoration, 405, 419; treatment of, 14, 37; triple rooted, 242; watering, 120; stocks for, 586
Viola Ardwell Gem, 48; Blandyana, 366; lilacina, 124; Loveliness, 190; stricta alba, 345
Violas and Pansies, 136; bedding, 489; blighted, 143
Violets in pots, 484; in autumn, 315, 368; Neapolitan, 193; select, 217
Virginian Creeper, 367; amongst shrubs, 434; Dog's-tooth, 177
Vitis Thunbergi, 310
Vriesia brachystachys in pans, 323

W.

Walks, salting, to kill weeds on, 14
Wallflower seed, 234, 539
Walls, Grapes on, 81; plant-covered, 500, 557; wiring, 98
Wall-copings, permanent, 584
Wardie Lodge, Edinburgh, notes from, 332
Wasp traps, 259, 318, 491
Water, broken margins to, 79; for Vines, 120; in park and garden scenery, 79
Watergate in Buckingham Street, 279
Watering fruit trees, 81
Watering pot, pedigree of a, 164; street trees, new plan of, 534
Water Lily at Kensington, 191; hardy red, 55, 78, 279; pond, the, 54, 94, 140, 316; on Grass, 539; Rose-coloured, 586
Water Soldier, 151
Watsonias, 190
Weeds, charring, 15; clearing a garden of, 526; destroying, 15; eradicating, 591; in Ponds, 143; on lawns, 48, 166
Wellingtonia, the Weeping, 282
Wellingtonias, fine specimens of, 578
Weigela, a golden-leaved, 55; a late-flowering, 154; amabilis aurea, 55; Looymansi aurea, 77; the white-flowered, 466
Wigan, public park at, 144
Wild garden, Alstrœmerias in, 3; plants for, 127
Willow trees, fine, 300, and malaria, 586
Wild flowers for table decoration, 67
Winter Cucumbers, 32; flowers, 143; ditto for cutting, 176; propagating in, 201
Wiring walls, 98
Wistaria sinensis, double, 165
Witsenia corymbosa, 514
Woodland work for November, 440; for December, 495
Woodland trees, fallacies concerning, 578
Woodlice in Cucumber frames, 98
Woodsia alpina, 341
Woods, high, in Trinidad, 406
Woolhope Club fungus foray, 279

X.

Xanthoceras sorbifolia, 309; propagating ditto, 105

Y.

Yellow bedding plants, 105
Yew hedges, clipping, 98
Yews, Irish, 428, 485, 534
Yucca baccata, 310
Yucca filamentosa variegata, 18
Yuccas in clumps, 177
Yuccas in the Isle of Wight, 525

Z.

Zephyranthes carinata, 27
Zeuyera Æsculi, 450
Zi-Goma, 324
Zinnias, double, 88; single and double 461

ILLUSTRATIONS.

COLOURED PLATES.

AMARYLLIS, TWO NEW ... 332
APHELANDRA FASCINATOR ... 222
ARMERIA SETACEA ... 266
AURICULA, VARIETIES OF THE ... 398

CAMELLIAS, GROUP OF NEW ... 354
CARNATIONS, YELLOW ... 580
CHRYSANTHEMUMS, JAPANESE ... 156
CROCUSES, EARLY AND LATE ... 420

DAHLIAS, BOUQUET ... 110
DAPHNE BLAGAYANA ... 200
DAPHNE ODORA VAR. MAZELI ... 442
DENDROBIUM GOLDIEI ... 244

EPIPHYLLUMS, GROUP OF ... 134

GEUM COCCINEUM FL.-PL. ... 562

HABRANTHUS PRATENSIS FULGENS ... 51
HELLEBORUS ALTIFOLIUS ... 178

IRISES, GROUP OF ... 12
IRISES, WINTER FLOWERING ... 490

LAPAGERIAS ... 376
LARKSPURS, PERENNIAL ... 86

PELARGONIUMS, FANCY ... 64
PICOTEES, YELLOW ... 589
PRIMROSES, JAPANESE ... 466
PUSCHKINIA SCILLOIDES ... 288

SAXIFRAGA OPPOSITIFOLIA VAR. ... 310
SQUILLS, EARLY SPRING FLOWERING ... 538
STUARTIA VIRGINICA ... 38

ENGRAVINGS.

A.

Abutilon igneum ... 474
Acrostichum peltatum ... 499
Adiantum Edgeworthi ... 555
Adiantum Hendersoni ... 511
Alders, various ... 437-40
Anemidictyon Phyllitidis tesselata 567
Anemone, cutting of ... 355
Anthonomous pomorum ... 491
Anthurium Scherzerianum var. ... 465
Apple, Wild Balsam, the ... 303
Apples, various ... 381
Artificial water, margins to ... 79

B.

Balaninus nucum ... 318
Begonia polypetala ... 531
Boronia serrulata, cutting of ... 399
Bouvardia cuttings ... 267
Branch hooker ... 118
Bridge, rustic garden ... 5
Brushes, steel, fruit tree ... 519
Buddleia curviflora ... 349
,, insignis ... 349
Bullace, a prolific ... 435
Buttercups, bouquets of ... 285
Butterfly, small white ... 107

C.

Calceolaria, cutting of ... 318
Calystegia sylvatica ... 507
Caterpillar of butterfly ... 107
Carnation layer ... 111
Carpocapsa pomonana ... 391
Cellars, vegetable, sections of ... 208
Cereus serpentinus ... 134
Cetonia aurata ... 428
Chrysanthemum, Anemone ... 375
Chrysalis of butterfly ... 107
Cichorium Intybus ... 63
Cobæa scandens, cuttings of ... 201
Cockchafer, the ... 197
Cockscomb ... 373
Coleuses, propagating ... 547
Correa, cuttings of ... 13
Crœsia Bergmanniana ... 259
Croton Prince of Wales ... 543
Cupressus Lawsoniana ... 157

D.

Dracæna, leaf of ... 121

E.

Eriodendron anfractuosum ... 340
Escallonia Phillipiana ... 103
Eulalia japonica zebrina ... 263
Eupatorium gracile, cutting of ... 87
,, riparium, cutting of ... 87

F.

Forficula auricularia ... 230
Freycinetia Banksia ... 359
Fruit gatherer ... 118

G.

Garden, a Thames-side ... 127
Garden Botany, 8-10, 34-6, 68-71, 82-4, 114-16, 138-41, 159-61, 182-85, 205-07, 226-29, 249-50, 270-72, 292-93—in all 336 illustrations
Garden covered way, a ... 57
Giants, the last of the ... 153
Gloxinia, leaf of ... 65
Gooseberry, standard ... 325
Gryllotalpa vulgaris ... 287

H.

Hadena oleracea ... 535
Heath, cutting ... 374
High Woods, Trinidad ... 406
Holboellia latifolia ... 369
Holly, cutting of ... 289
Hollyhocks, cuttings of ... 186
Hyacinth glasses ... 219
Hylotoma rosarum ... 245

I.

Indigofera tinctoria ... 29
Ice houses ... 585

L.

Label ... 402
Ledum latifolium ... 241
Lily bulbs ... 61, 237
Lily stem and roots ... 237
Loasa volcanica ... 28
Lobelia ilicifolia ... 353
Lonicera fragrantissima ... 329
Lophyrus pallidus ... 559
Lozotænia rosana ... 552

M.

Mammillaria erecta ... 95
,, longimamma ... 329
Microlepia hirta cristata ... 362
Microsperma bartonioides ... 91
Mikania scandens var. ... 252
Mr. J. McNab ... 459

O.

Onion fly ... 247
Orchard ladder ... 118

P.

Panicum virgatum ... 215
Paris Exhibition, grounds of ... 487
Park water, a reach of ... 31
Pear, the Ansault ... 471
Pear rails, French ... 307
Pears, select ... 417
Pelargoniums, cuttings of ... 223, 443
,, grafts of ... 443
Pelletier wasp trap ... 491
Pentstemon heterophyllus ... 505
Phloxes, cuttings of ... 39
Pieris brassicæ ... 94
Pinus Pinaster, cone of ... 20
,, ,, leaves of ... 20
Plants, dwarfed ... 174-75
,, hardy water ... 149-51
Plum, Coe's Golden Drop ... 419
,, Quetsche d'Italie ... 419
Platycerium, frond of ... 121
Polygonum tinctorium ... 29
Pot-herb moth ... 535
Primula, cutting of double ... 135
Propagating house ...

R.

Rhamnus chlorophorum ... 29
,, utilis ... 29
Rodriguezia recurva in a nutshell 577
Rose, a proliferous ... 413
,, cuttings ... 381, 403
,, grafting ... 426, 498
Rose pruning tools ... 314-17
Rose stocks ... 335
Rose layers ... 421-25
Roses, grafting ... 446-48

S.

Sagittaria variabilis ... 239
Secateur, the ... 314
Senecio macroglossus ... 351
Sewage irrigation, French ... 17
Stoves for greenhouses ... 296
Street trees, watering ... 534
Stuartia virginica, flower-bud ... 38

T.

Taxus elegantissima ... 515
Tipula oleracea ... 131
Tree stump, ornamental ... 193
Trap, for snails and slugs ... 535
,, wasp and fly ... 318

V.

Valve, slot throttle ... 97
Ventilator, patent automatic ... 581
Verdier, M. P. V. ... 142
Vine, pot trainer ... 405

W.

Watering-pots, two ... 164
Weeping Birch and cascade ... 17

Z.

Zeuzera æsculi ... 450

GEORGE MAW, F.L.S., &c.

Mr. George Maw, to whom this volume of the "Garden" is dedicated, was born in London on December 10, 1832. In 1853 he became associated with his brother, Mr. Arthur Maw, in the proprietorship and management of the well-known encaustic tile and majolica works at Benthall, near Broseley in Shropshire, where their energy, perseverance, and skill have brought the art of tile-making to an almost unrivalled perfection, and deservedly earned for them a world-wide reputation. From an early age Mr. Maw developed a great liking for geological research, and pursued it with unwearied diligence and assiduity. From the year 1864 up to the present time he has contributed a series of papers of great ability to the "Geological Magazine." His accurate knowledge of the character and distribution of the various kinds of clay has been of material service in bringing the Benthall tile pottery to such perfection. Having also devoted much time and diligence to the study of archæology, especially to that portion of it which relates to the ancient tesselated pavements of the Romans, he has been able to bring his knowledge to bear with much effect at the Benthall works. He has for many years past taken an active and prominent part in all matters connected with the religious, social, and political welfare of the country, and has been a frequent and powerful contributor to the Press. It is, however, with his eminence as a botanist of almost unrivalled keenness, and a collector, introducer, and discoverer of new, rare, and little-known plants, that we are more immediately concerned. Having, in his earlier years, made himself intimately and thoroughly acquainted with the botany of the United Kingdom, Mr. Maw commenced in the spring of 1869 a series of foreign botanical excursions, of which the following is a summary:—

1. April, 1869.—Gibraltar, Tetuan, Tangier, Escurial Mountains, and Tolosa Pyrenees.
2. July, 1869.—Zermatt.
3. October, 1869.—Volcanic district of Auvergne.
4. February, 1870.—Montpellier.
5. April, 1870.—The Riviera and Corsica.
6. June, 1870.—Central Spain and Pyrenees.
7. August, 1870.—Dauphiné and Mount Cenis.
8. January, 1871.—Lisbon and Cintra.
9. May, 1871.—Gibraltar, Tangier, Tetuan, Morocco, and the Great Atlas. [Mr. Maw accompanied in this excursion Dr. now Sir Joseph Hooker, and Mr. T. Ball, F.R.S.
10. August, 1871.—Luchon Pyrenees and Auvergne.
11. May, 1872.—Maritime Alps.
12. July, 1872.—The Engadine.
13. April, 1873.—Algeria and L'Aghouat Sahara.
14. July, 1873.—Dolomite district.
15. May, 1874.—Florence and Carara.
16. September, 1874.—Mont Cenis, Maritime Alps, and South-west Tyrol.
17. April, 1875.—Corsica and the Riviera.
18. July, 1875.—Mont Cenis, Maritime Alps, and South-west Tyrol.
19. October, 1875.—Lisbon, Cintra, Oporto, and Coimbra.
20. April, 1876.—Trieste, Italy, and the Riviera.
21. July, 1876.—Mont Cenis and Dauphiné.
22. September, 1876.—Spain and Majorca.
23. March, 1877.—Corfu, Athens, Syra, Constantinople, and Asia Minor.
24. October 1877.—Italy and Santa Maura.
    [In the latter island he met with his singular and remarkable adventure with Ionian Brigands, the tale of which he so graphically told in the "Gardener's Chronicle" of December 1, 1877, under the heading "Perils of a Botanist."]
25. April, 1878.—United States and Canada.

Mr. Maw succeeded in bringing home living specimens of most of the new, rare, and interesting plants which he collected during these excursions, and has since cultivated them with almost unfailing success in his garden at Benthall Hall, a fine old Elizabethan mansion overhanging the Severn, which has for many years been his residence, and where he has gathered together a collection of plants, books, and pottery as unique in character as it is replete with interest. His knowledge as a botanist is only equalled by his kindness and hospitality as a neighbour and a friend, and the large-handed liberality with which he distributes his plants amongst his numerous horticultural friends. Mr. Maw has made the hardier bulbous plants of Europe, Asia Minor, and the Mediterranean region of Africa his more special study, and has *par excellence* taken up the genus Crocus, a family first monographed by the lamented Dean Herbert some years ago. By the most patient and unwearied perseverance he has succeeded in importing living bulbs of almost every known species, which are, at the present moment growing in his garden at Benthall; the few remaining species are on their way to the same happy home. Mr. Maw has in active preparation an elaborate monograph of the genus, which will shortly be published, and for beauty of delineation and exhaustive accuracy of description, will rank second to no work which has as yet left the Press. Mr. Maw married a daughter of the Rev. Thomas Brown, rector of Hemingston, near Ipswich, by whom he has a numerous family, and whose kindly welcome and genial hospitality are never forgotten by any visitor to Benthall Hall.

Mr. Maw's frequent botanical excursions have resulted in the discovery of several species of plants new to science, including

Saxifraga Mawiana (Baker), Mountains of Tetuan, 1869
Boerhavia maroccana (Ball), Hills of Morocco, 1871
Draba Mawi (Hooker), Pancorbo, Spain, 1870
Stachys Mawiana (Ball), between Sektana and Frouga, Morocco, 1871
Ononis Mawiana (Ball), Tangier
Crocus corsicus (Vanucci), Corsica, April, 1875

Mr. Maw's published papers, which are too numerous even to give their titles here, may be found in the "Royal Agricultural Society's Journal," "Phytologist," "Encyclopædia Britannica," "Zoologist," "Times," "British Association Reports," "Edinburgh Botanical Society's Transactions," "Quarterly Journal of the Geological Society," "Builder," "Art Journal," and in our own columns, as well as in those of contemporary horticultural journals.

C.

THE GARDEN.

VOL. XIV.

TABLE PLANTS.

I have been asked to reply to the question, "How tall should table plants be for exhibiting?" and I am obliged to confess my inability to answer it in a few words, because I am not informed what is the kind of table upon which they are to be exhibited. To give information upon the heights of plants which may be used upon tables of different kinds, it will be necessary to run through the various uses to which tables are applied. These uses may be divided into two classes—tables not used for meals, and tables at which meals are served. First, as regards tables at which meals are not served. These relate to halls, drawing-rooms, boudoirs, &c., and it must be evident to all that it is impossible to lay down any law as to the height of plants for such purposes, since so much depends upon the size and mode of construction of the table, and also upon the other furniture and decorations in the room. The size of the plant cannot be determined upon by the size of the table only; it must also be governed by the lightness or the solidity with which a table is made. A heavy Oak or Mahogany table, 4 ft. in diameter, would look well if decorated with a plant which would be quite out of place upon a wicker table of the same size, notwithstanding that the latter table might be strong enough to support it. As a general rule, large heavy plants should be placed on tables in halls, and plants of lighter character and habit in sitting-rooms; but the height of the plants that would look best cannot be determined upon without seeing the table and its surroundings. It is equally impossible to fix upon a height for plants to stand upon a sideboard or dinner-waggon; and such plants may fairly be included under the title of table plants. Secondly, as regards tables for meals. These tables require to be treated in different ways, according to whether the meal be partaken of sitting or standing. If it is wished to decorate a table at which a standing supper is to be served, the height of the plants need not arbitrarily be determined upon, though some of the prettiest effects are produced by using, alternately, plants that one can see over and see under, the latter having their long stems ornamented in some tasteful manner, but so as not to interfere with people seeing each other as they stand at opposite sides of the table. The same principle should be applied to tables at which people sit to partake of their meals. There should be nothing upon the table which can interfere with seeing and talking across the table; hence the invariable rule observed by all the best dinner-table decorators, that nothing should intercept the view between the heights of 15 in. and 20 in. above the cloth. From whence it follows, that dinner-table plants, and, consequently, plants upon breakfast, lunch, and supper-tables, at which chairs are used, may be either short or tall, that short dinner-table plants must not exceed 15 in. in height, and that tall dinner-table plants must not have any branches below 20 in. from the bottom of the pot, but may be of any height that will look well upon the particular table and in the particular room which it is intended to decorate. The ignorance of these common-sense principles, which is so often manifested in the wording of schedules for flower shows, has surprised me much and has given great trouble to judges on many occasions. W. T. T.

CAMELLIAS AND AZALEAS FROM SEED.

It is stated (see Vol. XIII., p. 530) in reference to seedlings of these that "ninety-nine plants in one hundred would produce flowers not worthy of notice." Such is far from my experience; on the contrary, I should say that, unless the writer of the sentence in question takes the very best named flowers as models, he will get, through careful fertilisation, "ninety-nine" as good or better than the parents. In 1836, with no varieties to work with but the old Azalea indica, A. phœnicea, the variety called Smithi, and one or two more of about the same stamp, I raised a batch of seedlings, not one of which was as poor as the parents, and three of them are to this day equal or superior to any other of the same shade of colour in cultivation. The variegata type had not then been introduced into this country. Again it is said that "four or five years would elapse before the seedlings bloomed." In the summer of 1875 we fertilised about a dozen plants of Bijou de Paris, William Bull, and similar sorts with each other. The seeds were sown in December of the same year, and now, as I write, I have still in bloom several of these seedlings, at least 200 out of 500 having been in flower ever since April 1. The last one which opened this week was a very distinct, beautiful, double rosy-pink, quite equal in fullness and size to that best of doubles that I have seen—Madame Paul de Schryven. Of the 200 that have bloomed I have marked twenty equal or superior to any of the best Belgian varieties, and at least 100 of them are quite equal to the average character of any good collection. Several of them flowered in March of last year only fifteen months from seed. My experience has been of this character in the production of all kinds of plants and fruits that I have tried. Hovey's Seedling Strawberry and Boston Pine, raised in 1833, were selected from 1000 or more seedlings, but I might almost say hundreds, certainly dozens, were large and fine Strawberries. With the Camellia I have had still greater success, having produced twenty-five very fine double varieties out of probably 1000 seedlings, all superior to the parent of many of them (C. Warratah). Two-thirds of them, indeed, are quite as good as the greater part of the kinds grown at that time, such as Kingi, Colvillei, Pressi, conspicua, and other doubles, but irregular-shaped flowers, and five of them, I think, are unequalled by any yet produced. One of my Azaleas you will soon see at some of your London exhibitions, as the original plant, twenty years old, was purchased by one of your leading nurserymen. Our seedling hardy Azaleas and Rhododendrons have all been quite equal or superior to their parents. Judicious fertilisation is sure to effect changes and combinations which it is impossible to conceive, and results are sometimes as remarkable as they are unexpected. That all seedlings are deserving of a name and description, I do not admit; they should, indeed, be a very decided advance on what is already in cultivation to merit a name. C. M. Hovey.

Boston, Mass.

Aquilegias.—In addition to the remarks made lately by various correspondents of The Garden in reference to the culture of the North American Columbines, I may mention that the other day I saw a long bed of them in robust health, flowering and seeding abundantly. The kinds included A. cœrulea pure and simple, A. chrysantha, and the hybrid known as A. cœrulea hybrida. This gave me another proof that this fine hybrid is a natural cross, as I was assured that no artificial means had beem employed in its production, and not the result of "careful hybridising," as sometimes remarked. This circumstance well illustrates the close affinity of the two kinds, which are, in my opinion, but two forms of one species. The soil in which they were growing was of a very stiff character, with a retentive subsoil, thus showing that a light warm soil is not a proper medium for Columbines. It seems odd that cultivators should expect that these, and also a host of other hardy plants, will remain in a border year after year and give no more trouble than a common German Iris, as in their native habitats they are under quite different conditions from those usually found in a garden border; and, besides, they are not subject to such climatal changes as we experience in this country. To be successful in their culture it is necessary to substitute seedlings for old plants every two or three years. Seedlings may be raised with comparatively little trouble, which they will amply repay by a fine display of flowers such as I saw the other day.—W.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

ON Wednesday evening last the thirty-fifth anniversary festival of this charitable institution was held at the Albion Tavern, Aldersgate Street, under the presidency of Mr. Robert Marnock, and was one of the most successful meetings on record. The chairman, in proposing the toast of the evening, "Prosperity to the Gardeners' Royal Benevolent Institution," asked the assembly to sympathise with the cause and object which they had met to support. The Society (he said) was instituted forty years ago, since which time it had steadily progressed. There were at present seventy-seven poor gardeners on the pension list, who were each receiving pensions at the rate of £16 per annum, and £12 per annum for the widows. At the same time the Society had relieved during its existence 252 pensioners at a total cost of £22,780, and had funded £11,380 in the Three per Cent. Consols. It was a significant and gratifying fact to know that they had accomplished so much good, especially when they remembered that since the formation of the Society some 500 charitable institutions had been brought into existence. Speaking of the extended work of the gardener of the present day, he said about fifty or sixty years ago it was only the highest in the land who employed gardeners, but now we had many merchants and successful tradesmen, and others who had their gardeners. That was not less cheering for horticulture than for the country itself. In the work of the Society there was something for all to do. Those who could do so should become subscribers, and others could say a word in season concerning the objects of the charity.

Mr. Robert Wrench (whose name was coupled with the toast) hoped that not only the rich but the poor would contribute to the Society, for no one could tell what might happen to him. He knew of a case of a person being in receipt of £12,000 a year coming down to want the aid of a public charity. He regretted to say that the gardeners were far too backward in supporting the Institution.

Prof. Bentley gave the "Health of the Chairman," and spoke in high admiration of the good taste of Mr. Marnock as displayed in his designs for landscape gardening at the Royal Botanic Gardens, Regent's Park, and other gardens. He also alluded to the great improvement in the attendance at those grounds, stating that he had seen nearly 20,000 persons present in a single afternoon. The chairman briefly acknowledged the compliment, and proposed the "Health of the Secretary," warmly thanking Mr. Cutler for his unceasing advocacy of the interests of the Society, and for his long continued labours on behalf of the Institution.

Mr. E. R. Cutler said that only on one previous occasion had their anniversary festival resulted so favourably for the Institution, and that one occasion was when Baron Rothschild presided. The subscriptions on the present occasion amounted to over 600 guineas. After alluding to the great respect and popularity enjoyed by the chairman, Mr. Cutler said that there were present gentlemen from the west of England, from Liverpool, Manchester, Yorkshire, and other places, who had attended to do honour to the chairman. Thanking the assembly for the toast, Mr. Cutler said, that so long as he enjoyed their confidence he should continue to do his very best for the Society.

Mr. A. Philbrick, Q.C., proposed "Success to the Horticultura and Botanical Societies of London." He desired the success of a the great societies of the metropolis and elsewhere which wer devoted to the practice and interest of horticulture. A great deal wa due to the two societies he had mentioned, for they had been and were still the pioneers in the path of progress in the science of horticulture.

Dr. Brewer looked upon horticulture as a great friend, and as being of great use in sanitary matters. He thought that plants and their effect upon health was a subject of special interest at the present time. Their cultivation now in large cities like London was a matter of actual necessity to the health of the people. All that could be done in that direction and for the prevention of the spread of epidemic diseases had not yet been done, and he hoped that the work to that end would be persevered in. They were responsible in a great measure for the moral education of the people, and he hoped that the power they thus possessed would be used with all their energy.

New Irises.—Among the varieties of Iris Kæmpferi in Messrs. Hooper's collection, a large white one is remarkable for its purity of colour and a kind of beauty of line and form, which reminds one of a work in marble of the higher type. This variety is called Alexander Von Humboldt. De Vreese, a purple kind, is also an improvement on existing ones; and so is Sieboldi, a mauve variety. Others, representing different shades of lilac and other colours, are equally pretty.

Tuberous-rooted Begonias.—Messrs. Veitch's collection of these is just now in full bloom and well worth seeing. The plants are large, bushy, and healthy, and their flowers vary in colour from pure white to rose, and through all the shades of scarlet and crimson. Different types, both as regards habit, foliage, and flowers, are all well represented here, and afford a good opportunity for selection.

Double-flowered Zonal Pelargoniums.—New kinds of these are now so numerous that to select the best has become a difficult matter. In a collection of them in the Fulham Nurseries, however, the following seemed well worth attention, viz., Madame Thibaut, dwarf in habit, and with flowers of a clear rose colour; Fille de Honour, blush; Guillion Mangilli, semi-double flowers, bright crimson in colour; Talabot, bright magenta, very double; Lucie Lemoine, pink; and Venus, white. Either in bouquets or on the plants the flowers of these kinds are exceedingly effective.

Spiræa palmata elegans.—This has just flowered here and has greatly disappointed me, having nothing at all to recommend it. It does not appear to be a hybrid and intermediate between S. palmata and japonica, for, with the exception of the pinkish tinge on the anthers, it possesses no rosy hue at all, and I am afraid that this (unless in the case of those who usually search for effects by means of a microscope) will not be considered satisfactory. My impression is that 8s., the price at which the plant was sent out, ought to have been 8d., and that would even be too much. The palming off of plants at high prices by means of tempting descriptions and finely got up plates, cannot, I think, be too strongly condemned.—T. SMITH, *Newry*.

Epilobium obcordatum.—This little gem, which is now in flower, affords another striking instance of the richness of the Californian flora. Unlike the majority of the Willow herbs, it is very dwarf, not being more than a few inches in height and of a trailing habit. The leaves are, as the specific name implies, of a reversed heart-shaped form, of a bright green colour, about ¾ in. long and ½ in. in breadth. The flowers, which are borne singly yet profusely on short stalks from the axils of the leaves, measure about 1 in. across, and their colour much resembles that of Clarkia pulchella. It grows on an exposed part of the rockery at Kew, in a compost of rich loam and grit. As it is quite hardy and easily propagated, both by means of seeds and cuttings, it may be expected to soon become common in rock gardens.—W.

Epidendrum vitellinum.—This Mr. Wills finds extremely useful in a cut state. He therefore grows large quantities of it for that purpose, and, associated with the delicately-tinted blooms of Odontoglossum Alexandræ, in floral decorations the effect which it produces is excellent.

Lilium davuricum.—Many varieties of this beautiful hardy Lily may now be seen in good condition in the herbaceous beds of some of the London nurseries, and it is astonishing that they do not find their way into the London parks. They are subjects that may be seen at a distance, and a few beds of them would fill up a gap at a season when flowers are not over plentiful. The effect of these beautiful Lilies cannot, however, be shown by a single spike; they must be seen in quantity if their full beauty is to be realised.—JAMES GROOM.

Burning Bush (see p. 609).—This name is frequently applied to Dictamnus Fraxinella, because the plant is one of several which, under certain peculiar conditions of the atmosphere, has been frequently observed to emit a phosphorescent light.—S. GARLANDS, *Castle Street, Salisbury*.

NOTES OF THE WEEK.

Dinner-table "Decorations" do not seem to be improving. There are endless pains bestowed on them, and much delicate intricacy, but no advance in the direction of simplicity. What is wanted are good effects from materials few and simple, and such arrangements as could be carried out in a few minutes. The Royal Botanic Society might fittingly open up some improvement in this direction.

The Potato Disease.—This, we learn, was never known to be so bad so early in the year. The early Potatoes from the Channel Islands come in such a diseased state that they are unsaleable. On the spot even, when fresh out of the ground, the effect of this early prevalence of disease is to reduce the price of Potatoes to a very low figure, the round ones being offered at about 2d. per stone.

Barriers at the "Botanic."—We have to complain of the barriers erected in the Botanic Gardens in the Regent's Park to protect the Royal and other visitors from being mobbed by the well-dressed crowd. These seem to us to increase the danger of mobbing, and they certainly are an inconvenience to the public. In parts where there were no barriers the Royal party did not seem to suffer any inconvenience.

Convolvulus althæoides.—This pretty Bindweed, with large pink flowers and small cut leaves, which runs about among the stones and rocks on the shores of the Mediterranean, is quite hardy on light sandy soils in England. It is now flowering abundantly and running about as freely in Mr. Wilson's garden at Weybridge Heath as ever we have seen it in its native country.

Stuartia virginica.—This rare shrub thrives in moist peat soil about London, where it has lately been, and is still, in flower. The habit, though compact, is free and somewhat open. The flower-buds, before they open, are beautiful in all stages. There are crimson stripes towards the base of the petals in at least some individuals.

Evening Primroses.—The large-flowered and tall forms of these, now so beautiful and fragrant in the evenings and throughout the night, are plants that seed freely and take care of themselves in half-wild places—thin shrubberies, copses, and the like; so that anyone may enjoy their beauty without trouble or cost. They add a new charm to the garden in the evenings, and their odour is not of an overpowering kind.

Rosa Brunoni.—This beautiful and vigorous single Rose has recently been very attractive in Mr. McIntosh's garden at Oatlands Park. A specimen there growing on the margin of a shrubbery, and about 12 ft. high, throws its long shoots as freely forth as a Bamboo, and they bend towards the earth laden with showers of white flowers. It is a lovely Rose, and will prove of great value for shrubberies and wild gardens.

Alstrœmerias in the Wild Garden.—All who care for hardy flowers must, at this season, be struck with the beauty of Alstrœmeria aurantiaca, especially when it spreads into bold healthy tufts, and when there is a great variety in the height of the flowering stems. A valuable quality of the plant is, that in any free soil it spreads freely, and it is quite hardy. For dry places between shrubs, for dry or sandy banks (either wooded or bare), copses, or heathy places, the plant is admirable. We have even noticed it thriving under the shade of trees.

Shrubby and Herbaceous Spiræas Grouped Together.—We have lately seen a peculiarly beautiful effect afforded by a fine group of Spiræas—the finer shrubby and herbaceous kinds. Most conspicuous were two fine tufts of Spiræa ariæfolia, bearing picturesque trusses of feathery plumes; and near them were other shrubby kinds. On one side on the Grass were planted three of the finer herbaceous kinds—S. Aruncus, S. palmata, and S. japonica palmata, the last a fine plant in abundant bloom. There was not a trace of formality or awkwardness in the planting, the grouping being perfect. The effect of the fine deep rosy flowers of the one healthy tuft of S. palmata near the clouds of spray of the large shrubby kind was charming. The arrangement is suggestive of improvements in grouping in gardens—public and private. The stiff lines in some of our botanic gardens are far behind this even from a teaching point of view. From a similar group, more complete as to species, one would get a far more comprehensive idea of this beautiful family of plants than from anything we have ever seen in a botanic garden.—W. R.

Kew Gardens and Arboretum.—We have authority for stating that the Botanic Gardens and Arboretum at Kew are open to botanists and horticulturists from 6 a.m. in summer and daylight in winter on application at the curator's office. The houses and museums are closed during the hours of breakfast (8 to 8.45 a.m.) and dinner (12 to 1 p.m.). It is satisfactory that a matter of some importance to many concerned with horticulture is thus put beyond doubt. As for ourselves, none can be more willing to defend all the essential rights and needs of the Gardens, and we particularly hope that the question recently mooted of increased refreshment facilities in the parks will not crop up as regards Kew. The slightest liberty in that way would be a great injury to the Gardens. Some of the best Continental gardens are seriously marred by restaurants and the like that would be quite as conveniently placed outside the gates.

Asparagus in July.—The finest Asparagus which we have ever seen cut in July has just come to us from Mr. Harwood, Colchester. Mr. Harwood is one of the English growers who cut their Asparagus at about the same length as that of Argenteuil, *i.e.*, when it has grown about 1 in. above the ground. It is also, we think, as delicate in flavour as any Asparagus which we have ever tasted.

Ivy.—We have lately noticed at Mr. Parker's nursery at Tooting a novel and beautiful effect from a mixture of two very different Ivies in the same border—a very large shield-leaved kind (dentata) and the small, narrow-lobed (palmata). In the same place the same large-leaved sort has entered a lofty shed, which its fine foliage now adorns. The leaves seem nearly as green and no less ornamental than they are outside.

A Pretty Rock Scabious.—Scabiosa Parnassi is now a very beautiful object in sandy borders, spreading forth into grey tufts dotted with brownish-red flowers. It is one of the many rock plants the value of which cannot generally be seen, owing to the fashion of making rockwork of miserable, narrow "pockets," out of which the plants cannot spread, even if they succeed in living in them.

Pig Plants.—There is, at least, one species of Escallonia which emits a very powerful odour as of the sty. I write so that any of your plant-loving readers who notice this peculiar and far from agreeable odour may put the saddle on the right horse. Are there not other plants guilty of this bad behaviour? I think I remember detecting it in an Alaternus a good many years ago, having first looked in all directions for a more likely source for such an odour. I am greatly surprised that any vegetable should behave in such a manner.—T. O. B.

Anemonopsis macrophylla.—This rare and beautiful member of the Crowfoot family at first sight reminds one of the Japanese Anemone (A. japonica), but it is smaller in all its parts. The thick and shining leaves rise to a height of 12 in., the flower-stems are slender, about 18 in. in height, on which are borne numerous drooping blossoms, about 1½ in. across, of a pale purple colour. The flowers differ from the Anemone in having two rows of petals, one outside and spreading, the other forming a cone in the centre. It is a native of Japan. A specimen of it in flower may be seen on a rockery at Kew, where it seems to delight in shade.—A.

Coloured Plant Portraits.—Mr. B. S. Williams has sent us coloured illustrations of new Azaleas Princess Beatrice, Mrs. Carmichael, and William Carmichael, varieties obtained by crosses effected between Azalea amœna and varieties belonging to the Indian section, which are valuable for decorative purposes; also Croton mutabile, Prince of Wales, and Sunset, remarkable for their bright colours; Ixora Duchess of Teck, a hybrid with orange flowers; and several new Dracænas and zonal Pelargoniums, all of which are well worth having in any good garden.

The Crimson Stonecrop (Sedum sempervivoides).—This fine species, now in flower on a rockery at Kew, is certainly one of the most desirable of hardy succulents. Its foliage, which is quite unlike that of most of its congeners, is of a pale green colour, marked with dark brown spots, and arranged into a compact rosette about 2 in. across, like that of a House-leek. The flower-stem is about 6 in. in height, and bears a multitude of blossoms in a dense head about 3 in. across. The individual flowers are about ½ in. in diameter, of a bright crimson colour, and they last a long time in good condition. It is a native of Iberia and is an old introduction, having been figured in the "Botanical Magazine" as far back as 1824; nevertheless, it is rarely seen in gardens. Associated with it at Kew is another charming plant—the Sempervivum-like Navel-wort (Umbilicus Sempervivum), which seems to be confused by some cultivators with the preceding, but the two are quite distinct. In foliage the last-named plant resembles a House-leek even more strikingly than the Crimson Stonecrop, inasmuch as it has a rosette of bright green leaves edged with a reddish colour. Its rosy-pink blossoms are borne profusely on stems springing from the base of the rosette, and therefore procumbent. It is a native of stony hills near the Caucasian Mountains. Both of these plants are quite hardy in this country, and are of easy propagation—the former by means of seeds, the latter by off-shoots. Both will thrive under the conditions generally afforded to hardy succulents.—A.

NOTES FROM KEW.

Hardy Shrubs.—Philadelphus Gordonianus, a tall shrub from British Columbia, now in flower in the Pleasure Grounds, has large white flowers, which are, moreover, strongly scented; it is a useful kind for the shrubbery border. Spiræa Douglasi, a very fine North American species, grows about 6 ft. or 8 ft. high, and bears dense panicles of red flowers. Veronica devoniensis makes a very charming single specimen plant for a lawn; the one at Kew is a compact, cushion-like bush, 3 ft. or more in height, covered with spikes of white flowers, the purity of which is enhanced by the purple anthers.

Hardy Herbaceous Plants.—Trautvetteria palmata is an interesting and somewhat rare North American plant; it has lobed leaves and numerous, rather small, white flowers; the great number of the stamens, however, helps to render the plant tolerably conspicuous. Thalictrum rugosum, also a native of North America, is a noble kind with large panicles of straw-coloured blossoms; it attains a height of 6 ft., and is, altogether, one of the most striking of all the Meadow Rues. Dianthus Segiesvi var. Atkinsoni is one of the most handsome of the beautiful genus to which it belongs; the brilliant crimson-scarlet blossoms are freely borne on branches which are about 1 ft. high. Oxalis incarnata, a very dwarf sort, has pale blush flowers; and O. floribunda alba, growing about 1 ft. high, is one mass of white. The most noteworthy of the Potentillas at present to be seen in flower in the Kew collection are P. Dethomasi, 1½ ft. high, with large lemon-yellow flowers; P. argyrophylla, 3 ft. to 4 ft. high, with clear yellow blossoms (the colour of the variety P. argyrophylla insignis is slightly different from that of the type, and its height is only 2 ft.); P. atrosanguinea, 3 ft. to 4 ft. high, with blackish-crimson flowers; and P. nepalensis, 2 ft. high, with rosy-pink blossoms bearing a deeper blotch at the base of each petal. A distinct and handsome plant is Sedum sempervivoides; in habit it is remarkably like some of the House-leeks, and the flowers, which are borne in rather long panicles, are pink in colour. Astragalus alopecuroides, a Siberian Milk-vetch, growing about 3 ft. high, has whitish pinnate leaves, seated in the axils of which are dense clusters of large yellow flowers. Centaurea macrocephala is a splendid plant, which grows about 2 ft. high and has very large golden-yellow heads. Cirsium aculeatum has very pretty spiny leaves and purple flowers; it grows from 1½ ft. to 2 ft. high. Senecio artemisiæfolia, worth a place in the herbaceous border, if only for its finely-cut leaves, has Groundsel-like heads of orange-yellow flowers, which are borne in large numbers on flower-stems about 3 ft. high. A Japanese species of this enormous genus (S. Kæmpferi) is a beautiful and peculiar plant, with large, heart-shaped leaves and stout scapes, 4 ft. high, bearing numerous, shortly-stalked, large, golden-yellow flower-heads, for the topmost third or more of their length. Arctotheca grandiflora, from the Cape of Good Hope, is a desirable plant, growing from 6 in. to 12 in. high; it is now a dense mass of bright yellow blossoms. Two very handsome Loose-strifes are Lysimachia verticillata, 18 in. high, a pale yellow-flowered species from the Caucasus, and L. clethroides, a Japanese plant, of much more recent introduction; in habit and colour the latter is totally distinct from all the other species of the genus known in gardens; the smooth, shining leaves set off beautifully the terminal, drooping spikes of white flowers. Allium acuminatum, from California, a charming plant with purple flowers borne on scapes 3 in. or 4 in. high, is an excellent plant for the front of the mixed border. Milla ixioides (or, as it is sometimes called, Calliprora lutea), another Californian bulb, has umbels of large, yellow, green-striped flowers surmounting scapes about 12 in. high. Milla (Hesperoscordium) hyacinthinum var. lacteum grows 18 in. high and bears umbels of showy white flowers. An Anthericum named A. Renarni, a dwarf sort, little more than 12 in. high, has Grassy leaves and white flowers, and is altogether a graceful plant. A. ramosum is double the size of the last-named in all its parts, if we except the flowers, and these, too, are rather larger than those of A. Renarni. Cypella Herberti, a very lovely Irid from Buenos Ayres, has large, handsome, orange-yellow flowers; the Kew plants grow well in the open border, and attain a height of 2 ft. or 3 ft. Two of the finest members of the Lily family are the gorgeously beautiful Calochortus venustus (figured in The Garden for February 5, 1876) and C. splendens; the first-named has blossoms about 3 in. in diameter and pure white, except towards the base of the wedge-shaped petals, where a blotch of deep crimson shades off into yellow and dark and light red. C. venustus has large flowers of a delicate pale rose colour.

Greenhouse Plants.—Few cool house plants surpass in beauty the Cape Irid (Dietes bicolor); by far the larger part of the flower is snow-white, but yellow, brown, and pale purple help to make one of the most pleasing combinations imaginable. Anomatheca cruenta, one of the smaller-growing Irids, is a lovely little plant with scarlet blossoms. Dyckia frigida, a Brazilian Bromeliad, is an Aloe-like plant; a tall, stout scape springs from the rosette of thick, green leaves, and bears a large number of orange-yellow flowers. The Mexican Bouvardia triphylla makes a splendid show when planted out in the conservatory, the rich scarlet of its numerous flowers being very vivid. Callistemon rigidum is a handsome New South Wales shrub, with very deep red flowers. Beaufortia purpurea, another Australian plant, is a neat-habited little bush with blood-red blossoms clustered at the extremities of the branches.

Stove Plant.—Nelumbium aspericaule, a garden hybrid of which one of the parents is N. speciosum—the Sacred Lotus of the early Egyptians—is, in some respects, even much more beautiful than that very lovely aquatic; the leaves are larger, as are also the flowers, which are as well a shade or two deeper and brighter in colour; the leaf-stalk, too, is much rougher.—†

THE MERIT OF CARPET BEDDING.

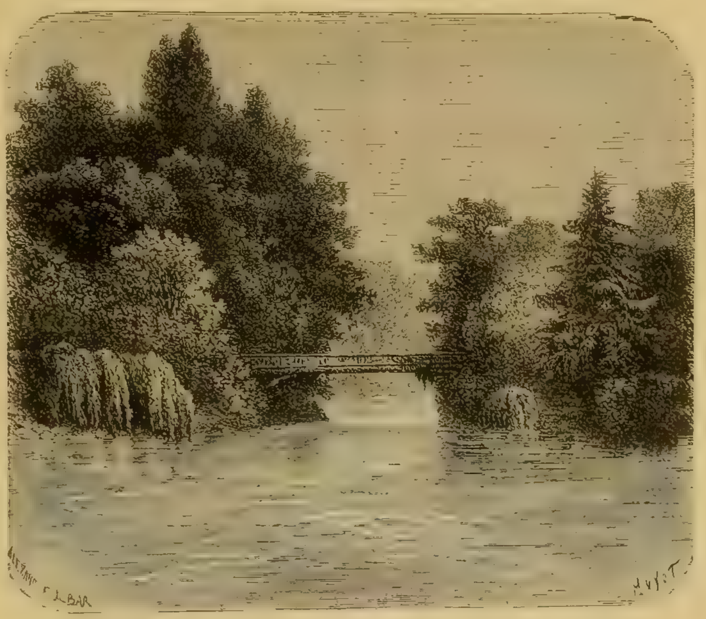
In a recent communication ("Art in Gardens," Vol. XIII., p. 539) I endeavoured to show what is, in my opinion, the demerit of the now dying "taste" known as architectural, geometrical, or carpet bedding. This crying demerit is, as I think, the unnaturalness of the whole system. However, I have long said to myself that it is impossible that any system altogether faulty can have for several years obtained the allegiance of numerous cultivated persons who can and do appreciate the beauties of landscape nature. Looking for the merits of carpet bedding, I found what is, I think, also a defect in the old-fashioned "mixed border" system, and in many attempts of gardeners unaccustomed to look at large and distant effects, viz., the absence of masses of colour, I appealed to my ever-ready teacher, Nature, in the matter. The answer I got was this: A varying sheet of greens, the old and young Grasses stretching into the blue of distance, interrupted here and there by billowy trees, green still but of varying shades; a woodland carpeted now with Violets dark or pale, now with Primroses, now with Anemones, again with Hyacinths or Foxgloves, as Nature flashes forth the varied lamps of her phantasmagoria; a meadow white with Daisies or Lady's-smock, golden with Buttercups or Marsh Marigolds, or ruddy with Fritillary; a down-side all ablaze with Furze or Broom, or left burnt in a brown robe of autumnal Bracken; a Cornfield red with Poppies, yellow with Charlock, or in its own glory of blue, green, silver, gold, and orange. Large masses of colour, now of shades softly blending, now in sharpest contrast, are extremely common in natural landscape; therefore, the lover of Nature wants them in his garden, and in the "carpet bed" he gets them. But he gets them unnaturally, for Nature's carpets are not geometrical like those of Kidderminster, Hyde Park, and elsewhere. The masses of colour I have spoken of generally mingle at their edges or "thin out" into a few scattered "outliers." They are sometimes roughly lenticular in outline, but hardly ever angular, never regular. The effect is one which may be readily obtained by the landscape gardener in the coppice, on the lawn, in the marsh, or in such a strip of unkempt Cornfield as I have formerly suggested might, in conjunction with a haw-haw, replace with advantage the high hedge or wall too often unsightly itself and also shutting out wild beauty beyond. Yellow has been fashionable this season, so I need not apologise for illustrating what I have just said by the following passage from a contemporary how Nature shades: "The cliffs present in different places, within an area of half a mile, different shades of yellow, very perceptible at a considerable distance. Thus in one set of places the cliffs are resplendent with the clear yellow of Lotus corniculatus; in another with the rich orange-yellow of Hippocrepis comosa; in another with the pale primrose of Anthyllis vulneraria; in another with the yellow heads of Trifolium procumbens, or the less conspicuously flowered, but leaf-spotted Medicago denticulata. Close by are large patches of Charlock, differing in tint, and a little later in point of opening than its near ally Brassica nigra. All these different shades of yellow are most marked and distinct, all occur within a few yards one of the other, and all exhale a marked perfume of their own not to be described in words, but easily recognisable." G. S. Boulger.

11, *Burlington Road, Westbourne Park.*

THE FLOWER GARDEN.

GARDENING IN THE PARKS.

My time is chiefly spent in the country, but every year I endeavour to get a look at the London parks and their decorations, and I find that striving after the impossible is still the "order of the day." Tender plants, that should never be moved from under the shelter of glass, continue to be planted out-of-doors, the result of which is that bedding-out, as it is termed, lasts the whole year round; for as soon as a bed or a portion of a design shows signs of failing fresh arrangements have to be made. Under such circumstances the finished beauty of a place is sadly marred; even on the longest day I saw more empty flower-beds than one expects to see at Christmas, and the only sign of the fine foliaged plants (Palms, Musas, and Tree Ferns) that usually figure largely in sheltered nooks, was the holes in the turf from which they were removed at least eight months ago, and some even more; can anything be more unsatisfactory than this? Surely something more lasting should be substituted. London trees and shrubs are this year exceptionally fine in foliage, and, owing to the continuous heavy rains which we have had, as clean and bright as in a country park or hedgerow. Why, therefore, should the beds be bare? Our turf, as regards verdure, cannot be equalled; it forms the best and most natural groundwork for showing off to advantage the natives of any clime. But why we should almost exclusively employ subjects that cannot be ventured out-of-doors until the days are drawing in and London society just going away, passes comprehension. The effect is by no means improved, and, worst of all, the greatest charm of a garden, viz., repose, is effectually destroyed. I am by no means of opinion that visitors to a garden cannot enjoy its contents while the workmen are pursuing their duties, as the necessary work of a garden gives life to the scene; but when the system of planting causes such an accumulation of labour on one spot as to render it soiled and trampled like a battlefield, some alteration is desirable. If better results were obtained by the use of tender plants instead of hardy ones, such a state of things might be tolerated, but such is not the case; for side by side are usually found beds planted with more permanent subjects that do not require one-half the labour that those filled with tender plants do, and yet they are equally attractive both earlier and later in the season. The Maples, both plain-leaved, coloured, and variegated, are a host in themselves, and what can be more handsome than the Ailantus annually cut down, Aralias, and similar plants? while as to hardy flowering plants, are there not Delphiniums of every shade of blue, Irises in colours unequalled even by those of the choicest Orchids, Œnotheras, Pæonies, Lilies, both delicate and showy, and Funkias, abundant in fine foliage? Musas and Tree Ferns are useful where proper situations can be provided for them, but they lose their effect by too close and constant repetition, while the extra labour and attention which they require might be otherwise employed. It is not so much the extent of a garden as its condition that gives pleasure, and if hardy subjects be used in its decoration instead of tender ones, more time can be bestowed upon routine work. J. Groom.



Rustic Garden Bridge, with Weeping Evergreen and Deciduous Trees on Shores of Islands.

ANNUALS AS BEDDING PLANTS.

It is generally admitted that the bedding-out system, as at present practised, cannot be satisfactorily carried out without the aid of considerable numbers of what are familiarly known as bedding plants, such as the Pelargonium, Verbena, Ageratum, &c., and this to a certain extent is true, and the preparation and protection of the requisite number of these tender plants in places where glass accommodation is constricted is frequently found to be a task of no inconsiderable difficulty. It is possible, however, to supplement the number of plants required for this purpose to a greater extent than is usually done, by the use of annuals, and of various kinds of perennial plants raised from seed sown during the spring of the season in which they are expected to bloom, or, in some cases, during the previous autumn, and treated as annuals. It is even found to be possible to induce the Zonal Pelargonium, the admitted *sine quâ non* of the bedding-out system, to conform to this treatment, although seedlings must not be expected to bloom so early as plants propagated by means of cuttings. To ensure as far as possible, however, their early flowering, the seed should be sown not later than September, or as early as the seed can be obtained in a ripe condition. And the young plants may be wintered in the pans in which the seed was sown, keeping them in a light, airy situation, and near the glass. Each ordinary or 10-in. seed-pan may contain from fifty to one hundred plants, so that during winter they will occupy but little space; and towards the latter part of February they should be pricked out into other pans or boxes, in order to give them additional space; and for a week or two they should be kept in a somewhat close atmosphere until the young plants become established. In April they may be potted off singly into 3-in. pots, shortening or cutting the rootlets well back at the same time, with the view of somewhat checking the luxuriance incidental to seedling plants, and promoting the early production of bloom. On this account rich soil should also be avoided. As soon as the plants have become established in their pots, the shelter of a cold pit or frame will be all that is required in the way of protection until the state of the weather will permit them to be planted in the beds or borders which they are intended to occupy. It will thus be seen that seedlings will occupy less space during the greater part of the winter than a similar number of rooted cuttings, or plants lifted from beds in autumn; and, if treated as recommended, they will generally begin to bloom about the middle of July. Beds furnished with such plants may not be so gay early in the season as those filled with plants raised from cuttings; their general appearance may be somewhat irregular, owing to diversity in habit of growth, and there may also be considerable variety in the shades of colour, but these and similar little drawbacks will be amply compensated for by the interest which is inseparable from watching the gradual development of seedling plants, and the knowledge that new and improved forms may possibly be detected amongst them. With the view, however, of securing meritorious varieties, it is, of course, necessary to save the seed from the very best sorts.

The Petunia is also a plant which may be raised from seed sown in the early part of the season in which it is intended to flower—say about the middle of February—and thus treated, it proves to be a most effective bedding plant. Its seed should be sown in pans and placed in heat until the plants have fairly vegetated, when they may be subjected to the temperature of an ordinary greenhouse until they have become sufficiently strong to bear handling; they should then be pricked out into other pans or boxes, in order to give them increased space, and afterwards they should be potted into 3-in. pots in April or early in May, so as to be fit for planting out in beds at the end of the last-named month. Petunias make exceedingly pretty beds, and continue in good condition until the very end of the season. If the seed be saved from any particular variety, placed at some considerable distance from other plants of the same species, the probability is that the seedlings will differ but little, if at all, from the parent plants. If, on the other hand, however, the seed be saved from a mixed collection, the varieties obtained will exceed in number those of the plants which produced the seed. If beds of double-flowered kinds be desired, a few of the best single kinds should be selected and grown in a light pit or frame, and, as these come into flower, carefully remove the anthers of a few of the blooms of each plant before the pollen is ripe, and about two days afterwards apply to the stigma, by means of a small camel's-hair pencil, a portion of pollen from the flowers of some of the best double kinds. Such plants, however, do not generally produce pollen in great abundance, so that it must be carefully searched for. When the bloom has been properly fertilised each pod will be found to contain a great number of seeds, so that the produce of even a few blooms will furnish sufficient plants to fill a bed of considerable dimensions. Not more, however, than 25 per cent., if so many, can be expected to produce double flowers, and although these may almost be selected by their foliage and general appearance before they have even bloomed, it is, nevertheless, best to get the plants as forward as possible, and to select them as their first blooms expand and furnish the intended bed progressively. Few beds can be more gay and attractive than one planted with single-flowered Petunias of good sorts, whether of one colour or mixed, and a bed of the double-flowered kinds; although, in the latter case, there may be less profusion of bloom, the bed has, nevertheless, a very rich and remarkable appearance.

The Lantanas are suitable plants for the flower garden, and during late years they have been greatly improved. They flower freely enough if not over luxuriant, and in order to check this tendency the soil composing the bed should be light, and stimulating manures should, in their case, be avoided. The seed should be sown in heat about the middle of March, and the seedlings should be pricked off into pans when sufficiently large, and afterwards potted singly. They will be fit to plant out about the end of May, and will continue to bloom throughout the season. The only drawback to the use of these plants is their somewhat disagreeable odour.

Lobelia speciosa or some of its varieties is indispensable in all styles of flower gardening. It can be and often is increased by means of cuttings, but seedling plants from a good strain give less trouble, occupy less space during winter, and are much to be preferred. The seeds, which are very minute, may be sown in heat in March, but the plants come more robust when the seeds are sown earlier, say about the end of January, in a cool pit or greenhouse, and the pot or pan in which they are sown should be covered with a piece of glass until they have fairly germinated. The seedlings, when large enough, should be pricked off into pans, in order to give them additional space, but in their case potting singly is not at all necessary, and they may be allowed to remain in the pans until they can be transferred to the beds or borders which they are intended to occupy. There are various varieties, most of which are good, and they generally come true from seed, if the latter has been carefully selected, *i.e.*, from plants which have not been in contact with other varieties.

Pyrethrum Golden Feather, on account of the delicate yellow colour of its leaves, is of great value in the flower garden, in which it is much used as an edging plant for beds and borders, ribbon lines, carpet bedding, &c. It is a perennial and quite hardy, but seedlings are better than plants propagated by means of cuttings, being less prone to run to flower. It ought to be always treated as an annual, and the seed should be sown early in March in pans placed in a gentle heat. From these the plants should be pricked off into other pans or boxes until they can be transferred to their places in the open air. There is a variety of this plant with cut leaves of the same shade of colour, but quite distinct in form, and this, as well as the type, comes true from seed.

The dwarf varieties of Ageratums may all be treated as annuals, and the seed should be sown in heat about the end of February or early in March. The plants will begin to bloom soon after they are planted out, but, being somewhat tender, they should not be put out before the last week in May. Seedlings, however, sometimes lack the uniformity of plants propagated by means of cuttings, and on that account the latter are generally preferred.

Some of the hybrid annual varieties of Tropæolums are useful as bedding plants, and some of the climbing kinds are invaluable for clothing pillars, trellis-work, rough walls, rock-work, &c. In preparing beds for the dwarf kinds the soil should not be made too rich, and the seeds may be sown where the plants are intended to remain; or they may be sown in pans under glass about the middle of April and planted out about the third week in May. Some of the best bedding kinds are Advancer, Ball of Fire, Eclipse, Firefly, and Mrs. Treadwell.

Rhodanthe Manglesi is one of our prettiest annuals, and, where soil and situation can be made to suit it, it forms a very pretty bed in the flower garden. The beds intended for its reception should be of considerable depth, and should consist of light, rich materials, such as turfy loam and leaf-mould. The young plants should be raised in gentle heat and should be pricked off into pans when large enough to handle, or they may be potted singly into small pots and planted out soon after the middle of May.

Dwarf kinds of Antirrhinums form interesting beds. The only objection to their use for this purpose is their want of persistence, although they are exceedingly floriferous and ornamental for a time. Seeds of them should be sown in slight heat about the beginning of March.

Dianthus Heddewigi is a remarkably pretty bedding annual, and one which continues in bloom during the greater part of the season. The double-flowering kinds are great improvements upon the single sorts, and for the production of cut flowers they are invaluable, the individual blooms being full, beautifully imbricated, and of various shades of colour, from pale lilac to the darkest crimson and violet-black. The central part of the blooms is generally barred or mottled, while the margins are elegantly fringed with silvery-white. All the varieties of this Dianthus continue in great beauty throughout the greater part of the season, and they may be safely recommended as interesting and beautiful bedding plants. The seed should be sown in pans about the end of March, be gradually hardened off, and finally planted out about the middle of May.

The numerous varieties of Phlox Drummondi may be regarded as among the very best of annual bedding plants, and many greatly improved kinds have of late been introduced. Possibly the best of all, however, is a new variety which has been sent out under the name of P. Drummondi alba oculata superba, which certainly appears to be a gem. Although it is vigorous in habit, it does not exceed 10 in. in height, and it produces numerous large, full trusses of flowers of good form and substance, the individual blooms being fully 1 in. in diameter. The colour is pure white, with a bright crimson centre or eye covering one-third the diameter of the bloom, which has altogether a peculiarly rich and waxy appearance, and the plant appears to come remarkably true from seed. It is quite possible that this variety may become a popular bedding plant. There are several other varieties of this beautiful Phlox, such as P. Drummondi grandiflora splendens and P. nana compacta, the last named being remarkably dwarf in its habit of growth, and the flowers are of a bright fiery-red colour. The seeds of the various annual Phloxes may be sown in slight heat about the end of March, and the treatment should, in all respects, be similar to what has been recommended for other half-hardy annuals.

To the above list of annual flowers many others might doubtless be added. Those named, however, will, I think, be found to be amongst the most effective and suitable for associating with the various varieties of ordinary bedding-out plants.

Culford. P. Grieve.

VARIETIES OF FOXGLOVE.

I know of many good things which may be had for threepence. You may go a long way in an omnibus for that sum. You may buy a copy of the "Times" with it. In beer or Tobacco it will procure a real amount of satisfaction. You may for that modest sum insure yourself before taking your seat in a railway carriage for an almost fabulous sum; and if in this case you receive nothing in return for your money, at least you can hardly grumble that it is because you came off with a whole skin. But of all the threepenny bits I ever spent, I have got most satisfaction out of one which early in last year I gave to Mr. Thompson, the seedsmen of Ipswich. In return he gave me a small packet of seed of Digitalis gloxinoides. This was scattered at the back of a peat border newly planted with Rhododendrons, and the result at this season is a really wonderful display of beauty. The flower-spikes are unusually tall; I measured one to-day over 8 ft. high, and with more than 180 blossoms and buds on it. The colouring of some varieties is pure white; others, white with large or small blotches of black or purple; others, again, are rose, with large blotches of black. The effect of the group against a background of dark trees is very fine. As the Foxglove is a biennial, the seed should be scattered yearly over bare places; for instance, where hedges or bushes have been removed, or in the back lines of shrubberies. If the ground be kept without Grass the Foxgloves will reproduce themselves in the same spot year by year, but if not then, bare places must be sought for them. They appear to do remarkably well in peat.

Salmoniceps.

IRISES IN FLOWER AT KEW.

To the section of Iris to which the well-known English and Spanish Irises belong the generic term Xiphion is now applied, and, as defined, includes those kinds which have a bulbous rootstock, combined with certain other peculiarities in the structure of the flowers. Of this section there are at present in flower three or four species worthy of mention, both on account of their beauty and rarity. X. tingitanum is a noble kind, about 2 ft. in height, and of very robust habit; its flower-stems, which are freely produced, bear from one to three blossoms, about 5 in. across, and of a deep rich purple colour. It most resembles the English Iris (X. latifolium), but is a much finer plant. It is a native of Tangiers, discovered a long time ago, but is very rare in cultivation. The plant figured recently in the "Botanical Magazine" under the above name is not identical with it, but is a broad-leaved variety of the slender-leaved Xiphion (X. filifolium), which is also in flower. It is not so fine as the preceding, but is, nevertheless, a very desirable kind. It is distinguished by well-marked characters. The outer membranous leaves are profusely spotted with a reddish-purple colour, and its flowers, which are borne singly on stems about 1 ft. high, are of a bright purple colour, which agreeably contrast with the bright yellow throat. It is a native of the Mediterranean region, and was introduced about ten years ago by Mr. Maw. The Rush-leaved Xiphion (X. junceum) is a charming kind, with Rush-like and spirally-twisted leaves, much resembling the Portuguese sort (X. lusitanicum), but is more slender in all its parts and later in flowering; it is also a native of the Mediterranean region, but is still rare. X. Sisyrinchium is a little gem about 6 in. high, bearing blossoms, about 2 in. across, of a lilac-purple colour, with a creamy-white centre, but which unfortunately lasts but a day; several flowers are, however, borne in succession from the same flower-stems; it is an old garden favourite, having been cultivated by Gerard as long ago as 1591. Of the true Irises, three of the yellow-flowered kinds are worth mention. I. Monnieri, a kind growing about 3 ft. in height, has pure bright yellow blossoms about 6 in. across; it is a native of Crete, and is one of the finest of the genus, though rarely seen. The Himalayan Golden Iris (I. aurea) much resembles the preceding, but has flowers a shade darker in colour and much crisped at the edges. I. ochroleuca, better known perhaps as I. gigantea, is also a desirable kind with the habit of the last two sorts, but with very large white flowers with a yellow throat. I. notha is a near ally of the better known I. spuria, but has blossoms of a delicate lavender colour. The tawny Iris (I. fulva or I. cuprea) is one of the few kinds which have all the divisions of the flower spreading; it also possesses a colour quite distinct from that of any other Iris, being of a reddish-brown, much resembling Hemerocallis fulva; it is a native of the United States, and, although it has been introduced many years, is still rare in gardens.

A.

ORCHIS LATIFOLIA.

In The Garden (Vol. XIII., p. 565) there is a well-deserved recommendation of this Orchis as a garden plant, the only objection to its general adoption being the high price charged for it by the dealers. I also observe that this week Orchis latifolia is mentioned as well worthy of cultivation. I believe that, under the right conditions, it might be made to rival O. foliosa, for I have seen it in a wild state with flower-heads as large as any I have seen of O. foliosa in gardens. In the corner of a meadow, about two miles from Eton, is a swampy spot planted with Willows for pollarding, and covered with Arundo phragmites (common Reed), the black soil being saturated almost to the surface with water for a great part of the year. Early in 1876 the Willow branches were cut and the surface was cleared. There followed, in June, an abundant and luxuriant flowering of O. latifolia, some of the flower-heads being fully 1 ft. long and closely set with blossom. In 1877, when the surrounding growth of Reeds and other rank herbage was greater, the number and size of the flowers were much diminished, and this year there are hardly any to be seen, though I believe the bulbs are still dormant in the ground, and would produce a growth similar to that of 1876 under similar circumstances. Another spot in which I have more than once seen Orchis latifolia with flowers equally conspicuous for size is a Willow bed on the north side of the railroad beween Reading and Theale, about a mile from the latter place whilst passing in the train about the middle of June. Will any of your readers tell me whether O. latifolia is really specifically distinct from O. maculata? In the locality mentioned, near Eton, they grow side by side; where the ground lies higher the form is maculata, but where a swampy hollow intervenes latifolia (or incarnata) is the prevailing type. The extremes are distinct enough, but I find amongst them intermediate connecting forms in which no distinct line of difference can be drawn—the lighter the colour of the flowers, the slenderer the stalk, and the greater the tendency to spotted leaves; but this rule is not without exceptions. By O. latifolia I understand the commoner form of the Marsh Orchis, without spots on the leaves and with rosy-purple flowers, though this form is figured in Sowerby's "British Botany" under the name incarnata.

C. W. Dod.

The Night-scented Stock.—In Vol. XIII., p. 629, are some remarks on a picture entitled "The Night-blowing Stock," which should evidently have been "The Night-scented Stock," a plant that, I presume, passes under several names, as what the writer calls Mathiola tristis is clearly the same as I have seen growing under the name of Cheiranthus odoratissimus, but in procuring it from a nursery the best way would be to describe it as the night-scented Stock. It is a plant that is singularly unfit for a picture, as its flowers are of a dingy stone colour, and, from a decorative point of view, are valueless, but after sunset they emit a delightful fragrance. For this reason the plant is useful in balconies and window boxes. It is easily increased by means of cuttings made of half-ripened shoots, and it grows freely in ordinary garden soil. It is tolerably hardy, having withstood ordinary winters in open boxes, but it is best to keep some reserve plants of it under slight protection. That the artist in question should have selected Poppies and Rockets in preference to so dingy a flower, and yet borrowed its more romantic title, is not to be wondered at while the rage for brilliant colours lasts. Really, night-flowering plants, of which Ipomæa Bona Nox is a familiar example, are totally distinct from night-scented flowers, but most of these are curiosities rather than valuable for their serviceable qualities.—J. Groom.

LILIUM HANSONI.

"A. W." (Vol. XIII., p. 613) states: "L. Hansoni we had over from Japan in the winter of 1869-70, and offered three bulbs of it for sale at Stevens', one of which was purchased by Mr. Wilson, another by Mr. Barr, and the third by Mr. Bull." Will you allow me to say that if this statement is intended either to assert or to imply that the bulb of the Lily exhibited by me, and named first L. avenaceum and afterwards Hansoni, was bought either at Stevens' in 1869-70, or from Dr. Wallace, or from the Colchester New Bulb and Plant Company at any time, it is entirely incorrect. As L. Hansoni, from its beauty of foliage, fine and distinct flowers, and pleasant scent, is likely, when introduced in larger quantities, to be a very popular Lily, you may, perhaps, like a short account of its first appearance in England. Having bought a remarkable Lily bulb, it was kept by itself; the next year, on re-potting, the bulb was found to be decayed, but with signs of life in some pieces of it; these were carefully nursed (moral, use of amateurs; in a busy nursery these would have had no chance), and the result was in 1875 a Lily with very remarkable foliage and buds. As these opened when I was fishing in Scotland, a flower was sent me by post, when, seeing it to be new, I directed the pot to be sent up to the Royal Horticultural Society's Floral Committee, and a flower-stem to be sent to Kew. At the committee meeting it was awarded only a second-class certificate (in its not fully-developed state it scarcely does itself justice), and at Kew it was considered to be L. avenaceum. Afterwards, owing to the bulb not showing the Oat-like scales characterising L. avenaceum, further research showed it to be L. Hansoni.

In October, 1877, my friend M. Max Leichtlin, of Baden, sent me a small bulb of L. Hansoni. On his reading the account of the L. avenaceum exhibited by me, and seeing that it corresponded with the description of L. Hansoni, he wrote asking if I had not made a mistake, and if the plant exhibited was not from his bulb of Hansoni. My garden book of course proved the contrary, showing two pots of L. avenaceum and the one of L. Hansoni received from him; this last had not yet bloomed, but its foliage made it probable that it would prove identical with L. avenaceum. I lately showed, at South Kensington, L. Hansoni in full flower, when it was greatly admired and awarded its proper honour—a first-class certificate.

"A. W." speaks of L. Szovitzianum. It bloomed well here, but to see it in perfection a visit should be paid to the Edinburgh Botanic Garden, where Mr. McNab, who appears to concentrate his energies on this particular Lily, grows it beautifully under the name of monadelphum, and, having raised a large bed of seedlings, has numerous varieties of form and colour and of spotting and non-spotting.

I am glad to see that "A. W." is growing Alice Wilson; it is a most distinct Lily. When I took the first plant (named after my daughter) to Kew, Mr. Baker told me that he and Mr. Elwes had just been questioning the correctness of a Japanese drawing of it. I believe the Japanese descriptions and drawings to be at least as trustworthy as some from nearer home, and therefore that there are still treasures in the Lily way to be expected from Japan, notably, a L. Krameri of much more intense colour than has ever been exhibited here. I once had a small abortive flower which went far to confirm this. George F. Wilson.

Heatherbank, Weybridge.

Aponogeton spathaceum, growing at Kew among the aquatics, promises to be a lovely hardy water plant. The leaves are Rush-like, and blossoms miniature, white twin flowers of great beauty; the plant is very dwarf.—Frank Miles, *Bingham, Notts.*

Spiræa palmata.—This is truly a glorious plant; the foliage, which is always ornamental, assuming beautiful tints in autumn; the stems too are of a deep red and carry broad corymbs of crimson-purple flowers. It makes a fine plant for herbaceous or shrubbery borders, and it is a useful plant for pot culture, combining, as it does, a flowering and fine foliaged plant in one and the same specimen.—J. Groom.

GARDEN BOTANY.

(Continued from Vol. XIII., p. 627.)

Superposition and Alternation of the Parts of a Flower.—The usual mode of insertion of the parts or members of one organ in relation to those of others, or rather those of one whorl in relation to those of another, is alternation; that is to say, the median lines or centres of the petals are midway between the median lines of two sepals, or coincident with the line where two sepals meet, or are joined, the stamens midway between two petals and standing straight before the sepals, and the carpels in the same position with regard to the stamens (see fig. 281, &c.). In Sedum (fig. 281) the petals alternate with the sepals, and five of the stamens are alternate with the petals, while the other five are superposed to the petals, or what is generally termed opposite to the petals.

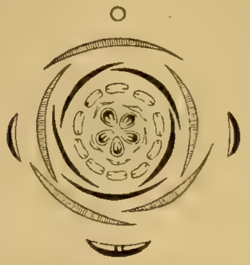


Fig. 281.—Diagram of flower of Sedum oppositifolium.

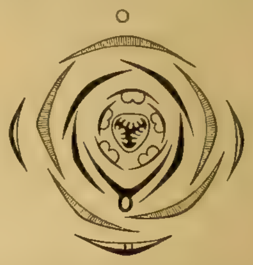


Fig. 282.—Diagram of flower of Violet.

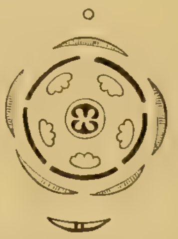


Fig. 283.—Diagram of flower of Grape Vine.

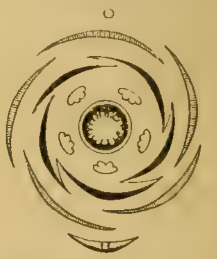


Fig. 284.—Diagram of flower of Cyclamen europæum.

Opposite is the word commonly used to indicate that one stamen stands immediately in front of a petal, or a petal in front of a sepal, &c.; but as these organs are not opposite to each other, not inserted in the same horizontal plane as opposite leaves, the term superposed is preferable. In the Grape Vine and Cyclamen (figs. 283 and 284) the stamens are of the same number and superposed to the petals.

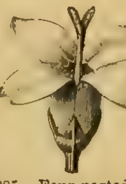


Fig. 285.—Four-parted flower of Asperula.

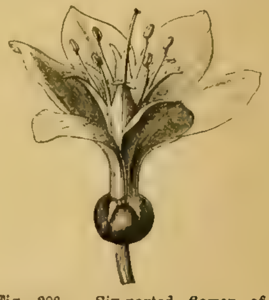


Fig. 286. — Six-parted flower of Eurycles.

Flowers of Monocotyledons and Dicotyledons.—There are no absolute characters in the flowers of these two classes of plants by which they may be distinguished, but generally speaking the parts of the flowers of dicotyledons are in fives or fours, or some multiples of five or four (figs. 283, 284, and 285), and when the floral envelope is single the parts are not usually petaloid, that is, like petals. The parts of the flowers of monocotyledons, on the other hand are commonly in threes or some multiple of three, and the parts of the perianth are nearly alike in shape (except in Orchids, &c.), and petaloid (fig. 286). There are many exceptions to these rules, notably the Grasses and Sedges among monocotyledons, which have their flowers enclosed in chaffy scales.

Regular and Irregular Flowers.—A flower is regular when all the parts of each whorl are alike, no matter what their shape, as those of the Buttercup, Columbine, and Peganum (fig. 287), irregular when the sepals differ in shape, as in the Violet and Aconite (fig. 288), or when the petals are unequal in size, as in Pelargonium and in Salvia (fig. 289).

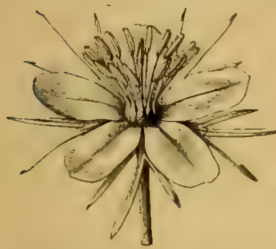


Fig. 287.—Regular flower of Peganum Harmala.

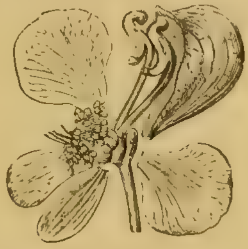


Fig. 288. — Irregular flower of Aconite.

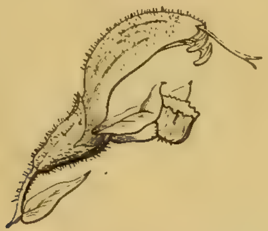


Fig. 289.—Irregular flower of Salvia.

Double Flowers.—What are termed double flowers by gardeners belong to three or four distinct classes. First, there are the so-called double flowers of plants belonging to the natural order Compositæ, the capitules or flower-heads of which have already been adequately described. The ordinary wild Dahlia (fig. 290) has flower-heads with broad, flat, ray flowers, whilst those of the disk are tubular and of a different colour. In a double Dahlia all the flowers are alike, and different from either the ray or disk flowers of the wild form, being large, like the ordinary ray flowers, with the margins rolled inwards. This metamorphosis or transformation of the flowers is not uncommon in the Compositæ, and includes Zinnia, Aster, Chrysanthemum, Marigold, and Daisy. In Zinnia and Marigold all the disk flowers are transformed into strap-shaped (ligulate) ones similar to those of the ray. Of Asters there are several races of varieties. The Quilled varieties have the disk flowers elongated, though retaining their tubular shape and forming a hemispherical or almost globular head; and in the Pæony-flowered and other varieties the disk flowers are flattened like those of the ray. Some of the Japanese varieties of Chrysanthemum have all the flowers, or those of the ray only, enormously elongated. Secondly, there are double flowers, resulting from a transformation of some or all of the stamens into petals, as in the double-flowered Cherry (fig. 292) and the Wood Anemone (fig. 293). In the former there is often every stage of transition from a perfect stamen to a perfect petal; and, what is still more remarkable, the pistil is transformed into or replaced by green leaves similar to the ordinary foliage leaves. Anemones, as is explained elsewhere, have no true petals, the white or coloured organs being petaloid sepals; and in the double-flowered varieties the stamens are transformed into petaloid bodies. A gradual transition from petals into stamens occurs in the normal flowers of the white Water Lily (fig. 294). Double flowers of this class occur in very many different natural orders, but they are extremely common in those having numerous stamens, as the Ranunculaceæ (Clematis, Anemone, Ranunculus, Aquilegia, Delphinium, &c.) and Rosaceæ (Rosa, Rubus, Pyrus, Prunus, Cratægus, Spiræa, Kerria, &c.). The Camellia also belongs to this class. Thirdly, there are double flowers resulting not alone from the transformation of stamens into petals, but mainly from a multiplication of the number of floral whorls. The normal Violet has only five petals and five stamens, the Pink five petals and ten stamens, the Balsam five petals and five stamens, the Pelargonium five petals and ten stamens, the Fuchsia four petals and eight stamens, and the Primula five petals and five stamens; whereas, many of the double-flowered varieties of each and all of these plants have exceedingly numerous petals or petaloid organs. Where there is an actual increase in the number of floral whorls there is a real doubling of the flower.

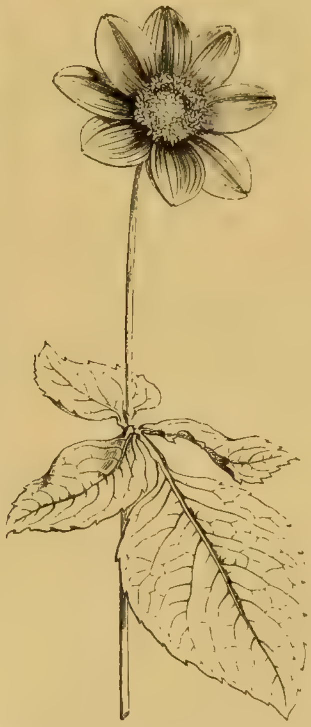


Fig. 290.—Dahlia, in which the flowers of the disk are different in shape from those of the ray.

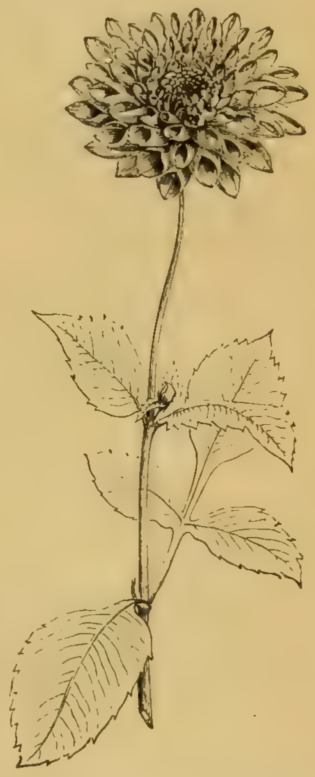


Fig. 291.—Dahlia, in which all the flowers of the head are alike, forming what is called a double Dahlia.

Double flowers of these three classes are not necessarily barren, for the pistil is often quite perfect, and occasionally some of the stamens, but there are some double Tulips in which both stamens and pistil are transformed into petals. Fourthly, there are the so-called double flowers of Hydrangea and Viburnum Opulus. In the single Hydrangea (fig. 295) the flowers around the circumference are larger than the others and barren; and, on examination, it will be found that it is the sepals which are enlarged, all the other parts being rudimentary or suppressed altogether. In what is called the double-flowered Hydrangea, all or nearly all the flowers are thus transformed. The wild Guelder Rose (Viburnum Opulus) has the outer flowers enlarged and sterile; and in a cultivated variety, known as the Snowball tree, all the flowers are so, forming a globular inflorescence.

Size of Flowers.—Perfect flowers range from 1-16th in. in diameter (Bæckea arbuscula) to 3 ft. or more, as in Rafflesia Arnoldi.

Duration of Flowers.—Flowers of considerable substance, such as Fuchsia, Magnolia, Nymphæa, Echeveria, Yucca, Stapelia, last for many days; on the other hand, there are some that open in the morning and close in the evening, never to reopen. One of the most striking examples of this ephemeral duration is offered by the genus Cistus. Banks of these shrubs during the flowering season are an attractive sight on a sunny morning, when the bushes are covered with fully-expanded blossoms; but by sunset of the same day not a flower is visible, and it seems almost impossible that they can be the same we saw in the morning. The individual flowers of the Day Lilies, Poppies, Flax, &c., last only one day, though this short duration of the separate flowers is amply compensated for by the long succession of flowers produced by most plants having this peculiarity.

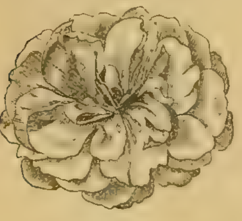


Fig. 292.—Double flower of Cherry.

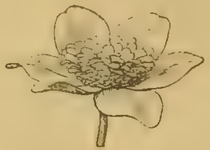


Fig. 293.—Double flower of Wood Anemone.

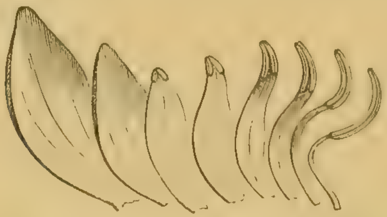


Fig. 294.—Transition of petals to stamens in Nymphæa.

Hour at which Flowers Expand.—Different plants exhibit great diversity in this respect. Cereus Macdonaldiæ, the night-flowering Cactus, as its popular name implies, blooms only during the night. The flowers expand after sunset, and close again on the break of day. Some flowers open only under the influence of sunlight, and soon close again if the sun is obscured; and there are flowers which open at nearly every hour of the day. Payer enumerates the following plants and the hours at which they expand at Paris: Convolvulus sepium begins to open at 3 a.m., Tragopogon pratense (Salsify) at 4, Papaver nudicaule (Alpine Poppy) at 5, Convolvulus tricolor at 6, Nymphæa alba (white Water Lily) at 7, Anagallis arvensis (Poor Man's Weather-glass) at 8, Calendula arvensis (common Marigold) at 9, Mesembryanthemum glaciale (Ice plant) at 10, Ornithogalum umbellatum at 11, Portulaca oleracea at noon, Scilla pomeridiana at 2 p.m., Mirabilis jalapa at 5, Silene noctiflora at 6, Cereus grandiflorus at 8, and Convolvulus purpureus at 10. The time of opening and closing of flowers and the influences under which they open and close are more deserving of the attention of the practical gardener.

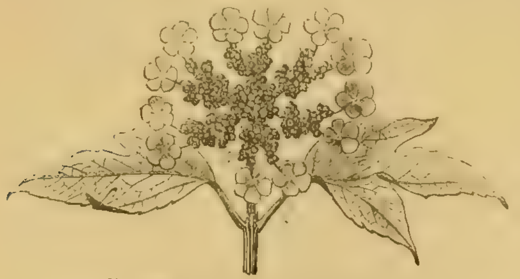


Fig. 295.—Single-flowered Hydrangea.

Odours of Flowers.—The odours of flowers are almost as diversified as their colouration, but we can merely touch upon this subject here. White flowers, as a rule, exhale the most agreeable odours, though there are not wanting brilliantly-coloured flowers, as well as some with very inconspicuous greenish flowers, which are highly fragrant. To the latter category belongs Mignonette. Lavender, Violets, Tea Roses, &c., have characteristic scents. The Dandelion has an unpleasant smell, whilst those of most Stapelias are absolutely fetid, and as offensive as carrion. W. B. Hemsley.

THE FRUIT GARDEN.

ORIGIN OF THE CULTIVATED APPLE.*

There is evidence that the Apple was employed as food in certain parts of Europe at a very ancient period, perhaps even before the period of written history. The carbonised seeds and fragments of Apples and other fruits are found in the mud of certain lakes in Switzerland, where the pile-builders or lake-dwellers had their habitations. These remains have an age variously estimated at from 5000 to 50,000 years. It might be supposed that these vestiges were wild or Crab Apples, the native produce of the country, and such is probably the fact. But, according to Prof. Karl Koch, there are no species of Apples truly indigenous in Europe, those which are found growing without cultivation being only escapes from cultivation, or the result of accidental sowings of common Apple seeds. If this statement is correct, the question arises, Whence came the Apples and fruits of the pile-builders? The same question might be propounded with respect to the Wheat which is found in the *débris* of their dwellings, and the answer to the one question would probably be an answer for the other. It is not improbable that the distribution of grains and fruits among the nations of the earth has a much greater antiquity than has commonly been admitted. In attempting to determine the original specific character of our common Apple we have to deal with a difficult question. The Apple of the present day is the product of centuries of cultivation and horticultural skill, and the transformations and modifications effected thereby are such that we need not be surprised if we are now unable to recognise the original or parent stock. Linnæus named the common Apple of cultivation Pyrus Malus, taking as the type the common seedling Apple, which he appears to have considered a good species, and the same view has been generally entertained by succeeding botanists. But scientific inquiry has been greatly stimulated and extended within the past half century, and theories and opinions that once passed current have been subjected to the severest scrutiny. In the investigation of scientific as of moral questions, when doubt obtains license, it sometimes happens that new ideas are pushed to an extreme. Let us, then, briefly consider the argument in this case.

In the first place, it is asserted that if our cultivated Apple were a distinct species, it would yet be found growing in a wild state in the country or countries where it originated. It is generally admitted that the earliest human civilisation took place in Western Asia, and in that country, or in Southern Europe, we should naturally expect to find the Apple in its native condition. But, according to Prof. Koch, there is no truly wild Apple to be found in these countries, the so-called wild Apples being merely such as have escaped from cultivation. According to his view, the Apple of cultivation is the result of crossing and intermingling through many generations of four and perhaps five species of Pyrus, some of which are still growing in an indigenous condition in some parts of Asia. These original species he considers to be, first, Pyrus pumila; second, P. dasyphylla; third, P. sylvestris; fourth, P. prunifolia, and perhaps P. spectabilis. These will be subsequently mentioned more particularly. I will here only state that of these five species Prof. Koch expresses doubts as to the true specific character of two, and suggests that they may have originated through long culture by the hybridising of some of the other species. The native country of one is China, and of the others, Northern China, Siberia, Caucasus, and Tartary. The remote localities of these species from the supposed centre of early civilisation will, to some minds, be an argument against counting them as the parents of the present cultivated Apple. It may also be said that the fact of the common Apple being nowhere now found in a truly wild state, does not amount to proof that it had not a separate specific origin, for it is well known that many other cultivated plants of the greatest importance as food for the human family are not now found in a wild state. Many plants in their native condition have comparatively feeble hold on existence, growing very sparsely and in a few restricted localities, and we can readily understand that such plants, unless taken up and fostered by cultivation, would soon disappear before the advance of civilisation. For example, although it is probable that the original of our Potato (Solanum tuberosum) is yet to be found in some localities in South America, it is not at all improbable that in a few centuries the botanist may search its native land in vain for any vestige of the wild plant.

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*By Dr. George Vasey, Washington, D. C., in proceedings American Pomological Society.

If our cultivated Apple were a hybrid, the produce of a mixture of several species, we might expect that the law of reversion would reveal to us its true parentage. It is claimed that a correct and satisfactory result from the action of this law could be reached only by a series of experiments continued with the greatest care for many generations. Prof. Koch states that experiments with the common garden Aster, which is cultivated in a great variety of forms, have taught him that all the forms of that plant after six, eight, or ten years revert to the original type. We would inquire if it may not be possible that Prof. Koch has not over-estimated the changes and modifications which cultivation has made upon our Apple. There are, it is true, several hundred varieties known to cultivators, but the larger portion of them have originated in recent times. That all these varieties have a not very distant origin would seem to be indicated by the substantial resemblance of the seedlings raised from such widely diverse varieties. In tracing the history of this fruit it is not necessary to go back to an imaginary period when it was so inferior in size and flavour as to be unpalatable and totally unfit for use. Of all the eastern species which have been claimed as parents of the cultivated Apple, not one probably equals the common American Crab in acerbity. Nature produces many other fruits of acknowledged excellence in a wild state, as, for instance, delicious Strawberries, Raspberries, Blackberries, &c., to say nothing of very passable wild Oranges, Figs, and numberless other tropical fruits. Having once obtained a superior variety of fruit, the skill of the horticulturist is employed to multiply and perpetuate it by the processes of grafting and budding, processes which preclude to a great extent any further deviation, because they are asexual and artificial processes. Natural variation manifests itself principally through the action of the floral or sexual organs of plants. This action, whatever may be its nature, is impressed upon and fixed in the seed. The most of our cultivated varieties, including some of the best, have originated spontaneously, that is, without purpose or anticipation on the part of man, but we are unable to perpetuate those varieties by means of the seed, the common course of seedlings from all varieties being to revert to an inferior form; hence, we may reasonably suppose that the ordinary seedling represents somewhat fairly the original form of the species.

Having thus stated various opinions respecting the origin of our cultivated Apple, we will now give a brief sketch of the different wild species, all of which are inhabitants of the Northern Temperate Zone.

The genus Pyrus is classed in the natural order Rosaceæ, the family which includes the Rose. It will not be necessary here to give the botanical characters of the genus, but we will only state that it is subdivided into several sections, as the Apple section (Malus), the Pear section (Pyrophorum), and some botanists add as another section Sorbus, or the Mountain Ash section. We do not propose to speak of any but the section Malus.

In enumerating the species, we will place first in order the five species which Prof. Koch supposes to have contributed to the production of our cultivated Apple, and of these, as we have before stated, he expresses doubts respecting the real specific nature of two, thus reducing the number of fundamental species to three; then we will add the remaining indigenous species, which he does not suspect to have had any participation in what he regards as our hybrid.

1. **Pyrus pumila**—Mill (P. Malus var. Paradisiaca—L.).—This is called the Paradise Apple, and in France the Doucin and St. John's Apple. Its native country is said to be South-eastern Russia, Caucasus, Tartary, and the Altai Mountains. It forms only a low tree, or sometimes a tall shrub. The leaves are elliptical, and woolly on the under surface. On account of its rapid and low growth this is principally used as a stock for dwarf Apples.

2. **P. dasyphylla** (Bork).—This is enumerated by Professor Koch as a species, and yet he says that it is certainly nothing more than an Apple tree become wild, and was counted by the elder Koch in 1843 as P. Malus, variety tomentosa. Prof. Koch says it does not now grow truly indigenous in the East, and asks if it may not have arisen through long culture. Linnæus, indeed, considered this as the original of the cultivated Apple. It is found in cultivation in Europe under many different names, among which are P. pulverulenta and armeniacæfolia.

3. **P. sylvestris** (Mill).—Prof. Koch says that probably Southern Siberia and Northern China is the native country of this species, and that it is frequently found growing wild in Europe as an escape and not as a true native. He remarks that by cultivation a series of varieties has arisen from this species, some of which resemble P. pumila, and some P. prunifolia. Indeed he suggests that it may possibly have arisen by cultivation from P. prunifolia.

4. **P. prunifolia** (Willd).—The Plum-leaved Apple. The native country of this species is said to be Southern Siberia, Northern China, and Tartary. It is the tree, or at least one of the forms of the tree, which is so commonly cultivated as the Siberian Crab. It is a beautiful tree both in flower and in fruit.

5. **Pyrus spectabilis** (Ait).—The native country of this species is China. It is closely related to P. prunifolia, but is distinguished by its longer and narrower leaves (2 in. by 3 in.), which are duller in colour, and retain longer the hairiness of the under surface; by the larger size of the flowers and the more numerous cells of the fruit. There are several varieties in cultivation, as Malus floribunda, Malus Kadio, and Malus Ringo.

6. **P. Ussuriensis** (Max.).—This is a handsome small tree, a native of South-eastern Siberia. Prof. Koch says that this agrees in the main with P. sylvestris, and he suggests that it may be the mother plant of that species.

7. **P. baccata** (L.).—The popular name which Prof. Koch gives to this species is the Apple with berry-like fruit. Its native land is said to be Siberia. It is more commonly a bush than a tree, with roundish or short lanceolate leaves, which are always pointed, mostly smooth and without woolliness, and toothed on the margin. Not only has the tree a pleasing appearance at the time of flowering, but it is much more pleasing when the branches are covered with the clusters of long-stalked, berry-like Apples. Several varieties of this species have been produced by cultivation, of which those called cerasifolia and sphaerocarpa are the principal.

8. **P. Toringo** (Lieb.).—The native country of this species is Japan. It is both bushy and tree-like. It has most resemblance to that variety of P. baccata called sphaerocarpa, but is distinguished by smaller fruit, by darker-coloured and somewhat thicker leaves, which are also more or less incisely toothed.

We next come to consider the American species of this group. They are three in number.

9. **Pyrus coronaria**—L. (Our common Crab Apple).—This species is found wild over a large part of the eastern portion of the United States and Canada. It is a small-sized tree, atttaining the height of 20 ft., branching low with stiff horizontal limbs. The fruit is about 1 in. in diameter, generally very acerb and unpalatable.

10. **P. angustifolia**—Ait. (The narrow-leaved Crab Apple).—This species differs little from the common Crab Apple. Its leaves are longer, narrower, and less disposed to be lobed, and in the flowers there is less union of the styles than in the preceding. Its range is not as well known, but it occurs in Virginia, in the Western States, and in Kansas. It is doubted by some botanists if it should be considered more than a variety of P. coronaria.

11. **P. rivularis.**—This is the only Crab Apple known on the western coast of North America. It occurs in Alaska, and descends to Oregon, Northern California, and Nevada. Its fruit is about the

size of a small Cherry, and is employed by the Indians of Alaska as a part of their food supply. Prof. Koch thinks that it is probably identical with the Japan species (P. Toringo), but we hardly know sufficient about either to decide this point.

THE SETTING AND SWELLING OF MELONS.

It cannot be too well understood by all Melon growers that the Melon needs to be artificially fertilised to insure setting; secondly, that all the fruits set will not swell beyond a certain size if the blossoms be not all set about the same time—within a day or two of each other. This applies chiefly to the first crop, which is always the most important as well as the most certain. It is, therefore, important, so to train the plants that a good number of female flowers be produced at or about the same time; male flowers are always to be had from some of the plants, and generally from the same plant on which fruit is set. The way to secure this result is to originate and maintain an evenly balanced growth. For example, if a plant has two limbs trained in opposite directions, as is frequently the case in frame culture, the limbs should be started off from the base at the same time, by means of pinching the leader, and when they have grown 2 ft. or 3 ft. they should be stopped simultaneously; this will cause them to produce side laterals, which, as a rule, show female flowers at the same time, and which can all be set once. If the first offshoots from the main limbs do not show fruit, or if only one limb shows fruit, or if the fruits are fewer for the size of the plant than is desirable, then the female flowers should be picked off altogether, and the laterals pinched again to induce sub-laterals, which generally show plenty of fruit. This is the only way to get a plentiful crop. It often happens, however, that when plenty of fruits are set they do not all swell beyond the size of a small marble, while a certain number will take the lead. Some of those that do not advance will sometimes turn yellow, and finally drop off; while others will remain green, but at a standstill. These latter should be left on the plant, and it will be found, as soon as the fruits which swell have reached their full size and begin to ripen, that they will in their turn begin to swell, and ripen off equally fine fruit, perhaps three weeks or a month later. This is called a second crop, but it really is from the first "set." A second crop properly so called is produced upon fresh growth made after the first crop has been all cut. Those who grow Melons must pay attention to these matters if they desire a good crop. Other means of insuring a plentiful first crop is to have plenty of plants. Suppose you have one plant to a light, which is a common thing, there is a chance that you may only have three fruits upon it; but if you put two plants in a light, there is a good chance of your having six fruits to a light, because there are two independent plants to work upon. This plan is often very successfully carried on in lean-to Melon houses by planting twice as thickly as usual, say 1 ft. apart, and stopping every other plant when it has grown half-way up the rafters, and the others when they have grown 1 ft. or or 1½ ft. higher. This plan requires methodical training, but there is nothing at all difficult about it, and it is a sure way of getting a plentiful and even crop. Of course, fewer fruits are allowed to a plant; but a greater average quantity is secured than could be hoped for by planting fewer, and growing them larger. The quantity of fruit which one Melon plant will carry and finish off to a good size, depends, of course, upon the vigour of the plant and its size. Sometimes plants will shew fruit very early, before they are well established; such should be picked off at once, for it is useless setting fruit before the plant has made a considerable breadth of good foliage, without which, fruit of either good size or flavour cannot be expected. Taking care of the foliage is indeed a far more important matter than soil, for the Melon will succeed in any ordinary good garden soil of which the staple is a good sound loam, while good turfy loam is the best material that can be procured for it.

J. S.

Two Good Strawberries.—In looking over the collection of Strawberries in Messrs. Veitch's fruit nursery, I was particularly struck with Pioneer and Loxford Hall Seedling, both of which promise to become valuable additions to the list of really good sorts. I may remark that amongst young plants lifted from the open ground and potted for comparison as to date of ripening, Pioneer bids fair to be one of the very earliest; it has a good deep colour, its flesh is firm, and the flavour brisk and rich. It is also a great cropper and the fruit is extra large in size. Loxford Hall Seedling is of the British Queen type, and a fine handsome Strawberry it is; one, I imagine, which will become as popular for later forcing as Pioneer will be for early work. It was, as its name implies, raised by Mr. Douglas, of Loxford Hall, and Pioneer is from Laxton's stock, a name closely identified with many of our best hybrids.—J. G.

PLATE CXXXV.

A GROUP OF HARDY IRISES.

Drawn by A. MACFARLANE.

The flowers which we figure are three varieties of beautiful hardy Irises, which are so valuable for the decoration of our gardens in early summer. At one time good varieties of Irises were scarcer than at present, and the plants were seldom well grown; but recently about London fine collections have been established in various nurseries, and the beauty of their flowers during the past month could scarcely be imagined by those who have not been fortunate enough to see such displays. These plants have every good quality which one could desire as regards hardiness, freedom of bloom, and easy culture. Like a good many other plants, their season of bloom is not long enough to please all; but by cultivating them in various places where they are not in the way when out of flower, this is not felt to be a drawback. Among large shrubs, which ought to be more widely apart than they are generally placed, in thin copses; among dwarf shrubs, in tufts near water, and in isolated groups on the Grass near, but not in masses of shrubs, are some of the positions in which they may be enjoyed in addition to mixed borders and beds. In such places they would mark the season agreeably, and not be in the way when their bloom was over, which they are sometimes found to be in borders. In the smallest gardens, where people have not the space to plant them in these various ways, one of the best modes would be to establish healthy tufts in the fringes of the shrubbery. Another good way is to place them here and there in carpets of low evergreens, above which their flowers would be seen in early summer. It is worth the while of all who care for hardy flowers to devote a little attention to establishing a good stock of these plants in their gardens. They have all the beauty of the finest tropical flowers without their cost, and will well repay the trouble of first arranging and planting them, so that their beauty may be seen to the best advantage, and so that they may not be in the way of the imperious needs of "bedding out." We may add that tufts of the finest kinds look very beautiful here and there among dwarf Roses. The flowers from which our plate was prepared were supplied from Mr. Barr's garden at Tooting. They consist of varieties of I. plicata, pallida, and variegata.

THE DEATHLESS FLOWER.

Yes! hope may with my strong desire keep pace,
And I be undeluded, unbetrayed;
For if of our affections none find grace
In sight of heaven, then, wherefore hath God made
The world which we inhabit? Better plea
Love cannot have, than that in loving thee
Glory to that eternal peace is paid,
Who such divinity to thee imparts
As hallows and makes pure all gentle hearts.
His hope is treacherous only whose love dies
With beauty, which is varying every hour:
But, in chaste hearts uninfluenced by the power
Of outward change, there blooms a deathless flower,
That breathes on earth the air of paradise.

From the Italian of Michael Angelo.

Gladiolus Colvillei.—This is a charming early flowering variety and a perfect gem in a cut state. It is of medium growth, and the flower-spikes, which are produced in great abundance, are in full beauty out-of-doors about the end of June. Forwarded under glass, it would be most effective during the spring months for conservatory and other indoor decorations.—J. Groom.

Libertia formosa.—It seems odd how little this lovely plant is grown in the open air. A week or two ago I thought it the most exquisite plant in the garden—white three-petaled flowers, like gems, on their grassy stems. The Sedge-like leaves are more than 3 ft. long on an old plant at Kew, where the wet spring seems to be agreeable to the plant. The Libertia is perfectly hardy, and one of the loveliest known border plants.—Frank Miles, *Bingham, Notts.*

Thalictrums in Borders.—Mr. Williams (Vol. XIII., p. 622) has directed attention to the value of these for the wild garden, but some of the kinds, such as T. anemonoides and alpinum, are equally suitable for mixed borders, where their delicate, Fern-like foliage is not only an ornament, but proves welcome for many purposes for which tender Ferns have often now to be used; their leaves are also much more lasting than those of Ferns.—J. Groom.

PROPAGATING.

Correas.—These may be increased either by means of cuttings, or by grafting. The cutting pots may be prepared either to accommodate bell-glasses, or to stand in a close box. The soil used should consist of peat, a little yellow loam, and a fourth part of sand, the whole sifted rather fine. Well drain the pots, which should be 6-in. or 4½-in., and fill them with the soil, which should be pressed in rather firmly, and ¼ in. of sand should be put on the top. Water the sand with a fine-rosed pot and insert the cuttings, which should be made as shown in fig. 1. When put in give a good watering, and place the pots on a cool bottom in the propagating house. April is the best month in which to strike cuttings. For grafting, take a free, strong-growing sort for a stock, which should be in the propagating house for a week or two before operating upon it; cut the stock as shown in fig. 2, and the graft as represented in fig. 3; unite them, tie round with matting or worsted, and put them in a close box; do not water them overhead. H. H.

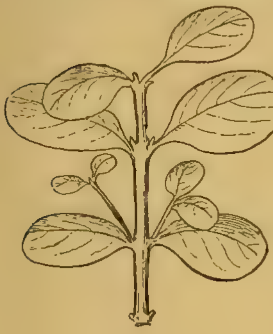


Fig. 1.

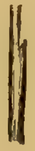


Fig. 2.

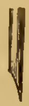


Fig. 3.

Refreshments in the Parks.—The First Commissioner of Works, the Right Hon. Gerard Noel, M.P., received a deputation lately from the Working Men's Club and Institute Union. Sir Harcourt Johnstone, M.P., stated that working men had represented to the Society that the poorer classes were unable to pay the prices demanded by those who supplied refreshments in the parks, and that permission was sought for stalls at which tea, coffee, &c., should be sold at the prices generally charged in the streets. Mr. C. Symons, of the South London Institute, showed that the inability to obtain what was wanted at prices which the poorer classes could afford prevented many families from passing the Saturday or Sunday afternoon together in the park. Consequently, the children strayed about the streets, while the father, perhaps, found his way to the beershop. Mr. Gerard Noel expressed his sympathy with the object in view, and said he would allow the experiment to be tried in the first instance in one park, selecting Battersea Park for this purpose.—"Daily Paper." [The sale of refreshments in the parks, if not conducted with the greatest care, will lead to evil results. We have strenuously advocated the opening of public gardens at all hours, but there are good reasons why their precious space should not be devoted to beer or other shops of any kind. In fact, there is no greater danger to public gardens. Few of our parks are so large that what is required may not be had near enough for most people. The opportunity for boozing, smoking, and tea-drinking is already large enough without stealing any of the ground that belongs to the trees and flowers and Grass. We would urge that Mr. Noel in making the experiment should insist on any structures for this purpose being erected in spots where the space was of the least importance, and where their aspect could not mar any of the quiet beauty which we seek in parks and public gardens—as, for example, in clumps of trees and in woody corners.]

Prophetic Language of Flowers.—A report of a flower show informs us that Messrs. Veitch showed a new Begonia, high and stately in growth, with a leaf tending towards the Strawberry. The plant is called the Earl of Beaconsfield. Messrs. Veitch perhaps contemplate the probability of having to raise their plants a step in the Peerage. They will prove themselves prophets, as well as florists, should the sequel of the Congress confirm the indication of the leaf of their Begonia "tending towards the Strawberry." Then they will also, of course, have foretold a pacific solution of the Eastern Question.—"Punch."

GARDENING FOR THE WEEK.

Pot Roses Out-of-doors.—In gardens, large or small, the many demands, more particularly at this season, upon the labour at command often results in something or other only receiving partial attention. There is nothing more likely to thus suffer neglect than pot Roses that are turned out, yet it is well to impress upon those who are comparatively new beginners in the cultivation of pot Roses for winter and spring flowering that upon the attention which the plants require at the present time being given them more than upon any treatment they receive during the winter depends their ability to flower satisfactorily at the time they are wanted. Roses are essentially sun and air-loving plants, and on this account the place chosen for them to stand through the summer should be under the full influence of sun and not too much sheltered by surrounding trees or walls, which always is likely to cause mildew. Where the plants, as is frequently the case after blooming, have been turned out at the north side of walls and other places, or in the shade of trees, they should at once be put for the remaining portion of the summer in the best open position that can be found for them, and, as advised some time ago, should have their pots plunged, as, without the latter precaution is taken to prevent the soil in the pots drying up too quickly, it entails almost an incessant use of the water-pot to keep the roots sufficiently moist, the neglect of which has a tendency to stunt their growth. Independent of this it is necessary to plunge the pots, so as to protect them from the direct influence of the sun. By some it is considered requisite that only the pots in which the roots of tender hard-wooded plants are confined should be shielded from the full force of the sun's rays, but it is quite necessary to similarly protect all plants when out-of doors, as when the soil gets full of roots these lay thickly against the inner surface of the pot, more especially the tender extremities which portion acts as absorbents, through which the food is conveyed to the plants, and suffer severely from the unnatural heat they receive when the full sun comes upon the sides of the pots, especially whenever the soil gets a little over-dry. After being in this condition I have frequently turned free strong-growing plants out of the pots to examine them, and generally found all the small rootlets on the side next the sun completely stagnated, affording sufficient evidence of the necessity for plunging.

Re-potting where Required.—Roses differ from many plants in there being no stated season that potting operations must be restricted to. Strong growers, particularly of the Tea varieties, that were potted early in the spring, only then receiving a small shift, will many of them have filled their pots with roots to a greater extent than the weaker growers will have by the end of the season. In this case it is advisable to give them more room at once, an operation that will well repay the labour by the size and vigour that it will impart to the plants, and, as I have frequently urged, a given number of strong examples will furnish more flowers than treble the quantity of smaller plants. During hot weather the soil should be well moistened before potting, and there is not the necessity for withholding water after potting, as in the case of tender-rooted subjects. I would again urge that in potting it is scarcely possible to ram the soil too close, providing there is a little sand in the compost, which will prevent it becoming an impervious mass; but Roses are not partial to near so much sand in the soil as many plants; neither, on the score of keeping it in a condition that the water will percolate through it freely, is it necessary that it should have as much sand incorporated with it as required in the case of plants that are not periodically partially shook out and have their soil renewed.

Rose Insects.—The worst of all insects upon Roses—red spider—which the late very hot weather will have favoured, is sure to make its appearance. There are no insects, not even the worst species of aphides, that so soon paralyse and destroy the leaves to an extent that renders them of little service to the plant as does red spider. Tobacco water is still the best remedy that I have found with a little Gishurst added; but syringing the plants with it in the position in which they stand is an extravagant way of effecting the destruction of the insects; if, instead of this, the plants be laid on their sides while being syringed over a vessel large enough to catch the liquid, one gallon will go as far as a dozen will where applied otherwise; the work can also be much more effectually accomplished in this way, as it is easier to get the liquid to the undersides of the leaves where the insects most congregate. If there be any mildew on them this washing will also effect its destruction.

Roses in the Open Ground and Planted Out Generally.—Aphides usually exist in the spring and after a time disappear, but in the present season there seems to be no end to them, as up to this time they have gone on increasing unless where vigorous efforts were made to destroy them. On walls, especially where the plants were not dressed thoroughly early in the spring, they have subsequently been almost impossible to deal with, but where they received a good washing with insecticide before the buds burst into leaf, in the way practised with wall Peaches, they have in many places not afterwards been troublesome, showing the advantage of taking timely measures to save the plants from their ravages.

Budding should be continued as the shoots of the stocks and the buds of the kinds desirable to be in this manner propagated can be obtained in a fit state. With the limited numbers usually grown in private collections the exact time for carrying out the operation when these are in the most suitable condition can be taken advantage of to an extent not possible where a very large quantity—such as grown by those who cultivate for sale—have to be got through; through a like cause the most suitable weather for budding can also be chosen, which is when it is dull and cloudy. The intense heat we have lately experienced has been such that I have noticed in many cases, particularly where the bark of the wood of the buds used had got a little hard and, consequently, did not part very freely, a good many failures through drying up.—T. Baines.

Flower Garden.

Pay all requisite attention to bedding plants by giving them sufficient water as often as required, and in this way, so far as possible, endeavour to make up for the late, unsatisfactory condition they are in. In applying water in dry weather, it is much better to give as much once or twice a week as will moisten the soil to a depth of 3 in. or 4 in., than to sprinkle the surface daily, which latter operation is far too generally practised, and tends to promote root-action near the top alone, leaving the lower and more important feeding fibres in almost a dormant condition.

Walks.—Where salting walks for the destruction of weeds is resorted to, dry weather is much the best in which to apply it; salt dissolved in water is the most approved method, but it should be as near boiling heat as possible. There is one objection to salting walks, viz., that it gives to most kinds of gravel a dark, damp appearance; and if the value of the salt thus used were spent in labour in hand-picking before the weeds became numerous and were allowed to seed, it would be found the most economical. Through the difficulty of extracting weeds from a gravel walk when dry and hard, they are often allowed to remain until moistened by rain, during which time they may be maturing and scattering seeds by the thousand, whereas if a few pots of water be poured on with a rose-spouted can, a considerable space may be thus moistened in a very short time, and the work of weeding greatly facilitated, as a man will do as much in one hour with the walk in a moist condition as he will in three when dry.

Indoor Plant Department.

Greenhouse Plants in Small Pots, that have their leaf-surface large in proportion to the amount of soil in which they are grown, will require constant attention as to water, of which a frequent supply, sufficient to saturate the whole of the soil, should be given, as they invariably suffer more from a scarcity of water than those plants whose foliage surface is more limited. Primulas of the cortusoides section, grown in pots, should be kept plunged through the summer in a bed of ashes on the north side of a wall, and well attended to with water, for, if at all neglected at this season, no subsequent attention can remedy the injury they will have sustained. P. japonica is not often seen in the condition in which it is capable of being produced, and through this cause has disappointed many. Instead of confining it to the small pots in which it is often flowered, if the plants have more room (say 10-in. or 12-in. pots), be grown in good soil, and supplied with manure water as often and as strong as a Calceolaria will bear, the appearance of both leaf and flower will be materially improved.

Campanula pyramidalis is one of the best summer-flowering plants that can be grown; it will now have made considerable progress, and will be much benefited by an application of manure water every week. Young plants raised from seed this spring should, as soon as ready, be pricked off into small pots and encouraged to make growth, for upon the strength they attain before autumn in a great measure depends their blooming capabilities during the ensuing year; when well managed they will make flower-stems 8 ft. or 10 ft. high.

Mignonette should now be sown in pots for winter flowering; this will not attain the size it would if sown a month or six weeks earlier, but for general decorative purposes it will be rather an advantage than otherwise, as a number of comparatively small plants, when well flowered, will in most cases be more useful than larger specimens. Take as many 4-in. pots as will be required, in the bottom of which put ¼ in. of drainage material, over this a little dry rotten manure, such as has been used for mulching, then fill up to within ¾ in. of the rim with good ordinary loam, to which has been added one-fifth of rotten manure and a little sand, pressing it firmly in the pots; on this sow the seeds (six or eight to each, ultimately thinning them down to half the number); place the pots as close as they will stand on a bed of ashes in a cold frame, and keep the lights off until autumn, unless the weather should be excessively wet.

Chrysanthemums.—Plants of these that were struck in spring, if not already in their blooming pots, should at once be placed in them; later-struck plants require pots quite as large as those that were struck at the end of December or beginning of January, and for ordinary decorative uses will do as well, but under no course of treatment will they produce such a number of perfectly-developed flowers, simply because the growth has not the chance of getting so thoroughly matured, which, even in the case of soft-wooded subjects, is indispensable. The earliest-struck plants that were transferred to their flowering pots some time ago, should, so soon as the roots get fully in possession of the soil, receive a regular supply of manure water. Even to Chrysanthemums it is possible to apply it too strong, but they will bear it much less diluted than most plants. The frequent advice given not to use liquid stimulants to them until the flowers are set is a mistake. Chrysanthemums, like most other Chinese plants, are exceedingly gross feeders, and to grow them well they require, in all stages of their existence, the application of rich manure water such as few plants will bear, and, in the absence of which, their flowers will neither be so perfect nor so abundant, nor the plants so well clothed with foliage down to the base.

Richardias that have done blooming, or that are wanted early in the winter for that purpose, should be planted out at once in partially shaded situations, where water can be easily administered, of which they will take unlimited quantities. In turning them out, dig and mix some manure well in with the soil in the positions it is intended the plants should occupy, and in planting keep the crowns low, that a slight basin may be formed round them for the purpose of holding sufficient water, in order to soak their roots well. To prevent the escape of this by evaporation, they should be mulched by having some half-rotten manure laid round them to shade the soil and prevent it from cracking open, which is invariably the case after frequent applications of water. Keep them free from blooms, so as to concentrate the strength of the plants in forming fresh crowns, and induce them to make a vigorous growth, without which they will not flower freely when wanted. Treated in this way they produce at least twice the quantity of bloom that can be got from them when confined to pots during the summer, independently of the saving of labour there is in watering and attending to them.

Spiræas.—These, like Callas, are half aquatic in their nature, and seldom get enough water if confined to pots; after they have done blooming, they should, therefore, be planted out, and treated after the same manner as recommended for the latter. Before doing so, they should be divided, if it be desired to have them in the same sized pots again at the time of lifting, as the effects of any mutilation of the roots that must necessarily take place in so doing is more readily overcome now than when the plants are going to rest in the autumn. A little fresh, rich soil filled it round the balls of the plants, and made solid and firm, will be of the greatest assistance in inducing them to make fresh roots and strong, vigorous crowns, without which their capacity for blooming will be of the most limited kind. As soon as they get a start, manure water may be frequently given them with the most beneficial results, and a syringing or damping overhead is equally acceptable to them.

Indoor Fruit Department.

Vines.—The progress made by newly-planted Vines the first season has so much influence on their subsequent condition that their requirements should be a matter for careful consideration. The principal young shoots should be tied as each wire is reached; the side growths should not be pinched unless they are obstructing the light. One-year-old canes, especially of Black Alicante, Barbarossa, and Syrian, are often months in starting into growth freely; the shoots grow until they are 6 in. or 8 in. long and then stop. The lowermost shoot is frequently more vigorous than the top one, and, when such is the case, the strongest one may be taken up as the principal leader. Except in the case of Muscats, no fire-heat is now needed in Vineries, either during the night or at any other time, as a temperature of 65° can be maintained by husbanding the heat of the sun in the afternoon. Muscats will ripen, in a certain fashion, in a night temperature a few degrees below 70°, but, where perfection is desired, nothing under that need be tried.

Pines.—The first batch of suckers may now be taken off and potted. Queens, from which the earliest fruit was cut, should have them in a fine mature condition. Plants bearing fruit may have large suckers also, but the size should not be taken as a guide to their fitness for being taken off, for no sucker should be cut from the parent plant, unless the base of it is hard and nut-brown in colour, let its size be ever so great. Those taken off and potted with blanched tender bases seldom succeed, and should be allowed to remain on the plant for a month, or even longer if necessary. In taking off the suckers, be careful not to bruise their leaves or injure their stem. Some of them may be twisted off with the hand; others with a firmer hold require to be cut closely into the old stem with a knife. But this mode of operation needs a little care when the plants are in fruit, as the foliage is easily damaged. Pull all the small bottom leaves off with the hand, but do not go above the point where the brown colour terminates, and do not touch any of the small roots which will be seen protruding round the bottom of the stem. Where accommodation is available, each sucker should be placed in a 6-in. pot, into which 2 in. of broken crocks should be put as drainage. The compost used should be the best fibrous loam, to each barrow-load of which should be added an 8-in. pot full of fine bone dust. When the soil is somewhat retentive, some horse droppings may be intermixed with it. The soil should be firmly pressed about the sucker with the hand, and the pots plunged in any pit or frame where a bottom-heat of from 85° to 90° can be obtained for five or six weeks. The suckers should not be watered until their roots have reached the sides of the pots. Syringe overhead every hot afternoon, and shade closely until enough roots are formed to prevent the leaves from shrivelling, or a check may be given, from which it will take them a considerable time to recover. By putting the largest suckers in now the growth may be so far advanced that there will be every chance of their fruiting next autumn, instead of the following spring.

Hardy Fruit.

Peaches and Nectarines on Open Walls.—As these increase in size attend to thinning any that may be too thick, bearing in mind that it is a decided loss to have them too crowded. When more are left on the trees than they can support, not only is permanent injury done to the trees, but the weight of the crop is by no means increased in proportion to the numbers grown. When too many are left there is a preponderance of skin and stones in place of full-fleshed, large, handsome fruit; gradually, and not all at once, expose each fruit to the full action of the sun by removing all the leaves that obstruct its coming directly upon them. By this means only can the requisite colour be imparted to them, without which the largest examples are deficient in both flavour and appearance. At the same time do not by any means denude the trees of leaves too much or the root power will be correspondingly weakened. Where the portion of a leaf at its extremity only overhangs a fruit, break the leaf off in the middle; the part that is left, if free from insects, will remain in a healthy state upon the tree to fulfil its allotted functions, so far as its reduced dimensions will permit, as long as if it had been left entire. Never remove an entire leaf, to thus expose the fruit to sun and air, when taking away one-half will answer the object. Keep the trees regularly syringed with clean water, standing sideways in doing the work, so as to get the water well to the underside of the leaves, or it will only be partially effectual. Give abundance of water at the roots also when the weather is dry. Remove all superfluous shoots, so that the full strength of the trees will be directed to the production of good bearing wood for another year.

Strawberries.—Those who intend to grow pot Strawberries should at once see to laying some runners in pots as soon as any are ready; there is nothing like doing this work in time, for upon the thorough preparation of the plants depends the crop they can be induced to bear. For the purpose 3-in. pots should be used; put a bit of turfy loam in the bottom of each for drainage, fill up with fine rich soil of a moderately heavy nature such as accords best with this fruit, and then with an ordinary planting trowel make holes in the ground where the pots are to be, in which plunge them up to the rim; so managed they will not dry so quickly, consequently a good deal of labour will be saved in watering, for if ever allowed to get very dry they will be seriously injured; after the pots are plunged, the runners must be placed on them, laying a stone the size of a hen's egg upon each to keep it in its place until rooted, when they will need transferring to 6-in. pots.

Kitchen Garden.

There is no such period as a "slack time" for the kitchen gardener; at least, I have not yet been able to discover it, for no sooner is one crop planted or sown than another requires thinning, another earthing and weeding, and another lifting or harvesting, in order that the ground may be again prepared for cropping. Such is now the case with Shallots and Garlic, which, in many instances, will be ready to be taken up; they should not be allowed to remain after the tops have dried off, but pulled up and left on the ground a day or two to dry, and afterwards tied up in convenient bundles for use, and hung up in the vegetable shed or other airy, cool, dry room. The ground where they have been grown, if well dressed when they were planted, will not now require digging, but simply levelling and weeding, drawing drills afterwards for the sowing of Endive, or black-seeded Bath Cos Lettuce for early winter use. If it be thought desirable to preserve the stock of any good variety of vegetables, such as Cauliflowers, Lettuce, &c., select the most perfect types for seeding, and stake or otherwise mark them in order that they do not get cut when the crop is being used. No two kinds of Cabbages, Brussels Sprouts, or Cauliflowers should ever be seeded together if the stock be desired pure, for bees are wonderful hybridists, but not particular as to how or on what they operate. Tomatoes are now growing freely, and will require to have their growths trained or tied in; if there be a tendency to strong growth, repress it by severe pinching of the lateral growth, an operation which also promotes fruitfulness. If the fruit set too quickly, thin it out, and remove all the large leaves that keep the light off it. As a rule, high feeding is not necessary for Tomatoes, but if bearing freely, they may be assisted by an occasional watering with weak liquid manure. Where Spinach is required all through the season, seed must be sown regularly every fortnight, as it will not stand much beyond that period without running to seed; any vacant spot that can be cleared from other plants may be used for this purpose. As the crop of Cabbage is cut, strip the leaves from the stumps, as they only harbour slugs and caterpillars; give the ground a good soaking with manure water to assist the stools to throw out fresh side shoots, which will furnish through the remainder of the season a useful supply of tender sprouts.

Leeks.—If these have been treated as advised earlier in the season, by being sown at the proper time, and thinned out in the seed-bed, so as to give them enough room to grow, they will now be in good order for planting. The ground they are to occupy should be well dug to the depth of 15 in. and broken fine, so as not to leave any large, hard lumps. Plant in rows, 15 in. apart, with 8 in. or 9 in. between the plants, and, in planting, use a stout dibber, that will make holes 8 in. deep and 2 in. (or a little more) in diameter. In these place the plants, dropping in soil to the depth of 1 in. or 2 in., but no more, leaving the rest of the hole open, and giving a good watering, so as to settle the soil. By only partially filling the hole, the requisite air gets down to the roots, and the opening above affords space for the stems of the plants to thicken, and also blanches them in a way that imparts the peculiar delicate flavour which a well-grown Leek possesses. If the ground be good and well enriched, they will, under this treatment, grow almost as thick as a man's wrist, and are far superior to the small, tough, strong-flavoured specimens of this vegetable which are often to be met with.

Killing and Charring Weeds, &c.—Hand weeding is very slow work, and where all the culinary vegetables are grown in rows, as they ought to be, there is comparatively little of it required; but the late showery weather has much retarded the use of the hoe, and in many cases the removal of weeds by hand will have to be resorted to. It may be well to remind those who are novices in gardening that it will not suffice to merely pull up weeds that have got to a considerable size and leave them on the surface of the ground, as with many of the annual species, especially Groundsel and Chickweed, it would merely hasten their increase, for the seeds in a very short time become sufficiently developed to grow if the plants are pulled up when they are apparently just opening their flowers. There is no safe way with them but removal to the refuse heap, where, if mixed with Grass mowings, green Potato tops, and other vegetable haulm, they quickly get so hot by fermentation as to destroy the vitality of the seeds. Treated in this way, and soaked with soapy water and house slops, they become valuable fertilisers, and as such will be found more effective than animal manure used alone. The right principle upon which to act is to return to the soil, in a decomposed harmless condition, all that it has produced of a useless description, without recourse to burning, which, under the impression that there is no other way of killing some weeds that are unusually tenacious of life, is sometimes resorted to. With good management this is unnecessary, and, as it is wasteful, should never take place. It may be necessary to point out that there is a great difference between charring and burning; in the former the bulk is comparatively slightly reduced, in the latter little is left. In a garden nothing should be burnt except it be too woody to rot, such as prunings and strong hedge clippings. When hedges have received their summer dressing the clippings may be partially dried and afterwards used for charring weeds, such as Couch Grass. They should be mixed with clay or other earthy matter sufficient to prevent the whole from blazing, a smouldering heat, sufficient to destroy vegetable life, being all that is required. The material so treated will not be very much reduced in bulk, and is very useful for digging into the kitchen garden, especially where the soil is of a heavy nature.

Extracts from my Diary.

July 8.—Sowing Cucumbers for late crops. Potting Tree Carnations; also a large batch of Roses in good strong loam. Planting out Veitchs' Autumn Giant and Self-protecting Broccoli. Thinning Turnips and Early Horn Carrots. Gathering Strawberries for preserving. Sticking Peas and getting them earthed up. Pulling up all blind-hearted Cauliflowers and Broccoli, and filling up their places with good strong plants.

July 9.—Planting out a pit with Tender and True Cucumbers. Training out and pegging down bedding plants. Staking and tying in plants on borders and clearing away decayed leaves and flowers. Taking the nets off early Strawberries and putting them over Currants. Weeding amongst Leeks and giving them a little earthing up. Thinning out Cardoons and lightly moving the soil amongst them.

July 10.—Sowing Spinach. Potting on a batch of Queen Pine suckers and placing them in a brisk bottom-heat. Digging up a large piece of Gloucester Kidney Potatoes and placing them out thinly in the sun to ripen well for seed next season. Watering Celery and Cardoons; also Lettuce and Endive beds. Drawing drills for Spinach and well watering them previous to sowing. Nailing and tying in all the leading shoots of fruit trees on walls and pinching back all the breast wood. Potting up a large batch of President and Sir Charles Napier Strawberry runners for forcing.

July 11.—Sowing Sweet Basil and Chervil. Potting on Campanula pyramidalis; also young Cyclamens. Taking up Shallots and Potato Onions and laying them out in the sun to ripen. Gathering Camomile flowers; also Sweet Basil, Horehound, and other herbs for drying. Weeding and cleaning all Box edgings in kitchen garden. Hoeing and weeding amongst Peas. Nailing and tying in Roses on walls and picking off all dead flowers. Watering all newly-planted Broccoli, Cauliflowers, and Tomatoes, and renovating linings round manure frames.

July 12.—Sowing Lettuces and Endive. Potting up Strawberry runners for forcing. Nailing in Tomatoes and closely stopping them. Tying up Dahlias and thinning them out where growing too thickly. Earthing up Celery when the soil is dry and in workable condition. Looking over Vineries, stopping laterals, and giving the roots a good soaking of guano water where required. Gathering Raspberries and Red Currants for preserving.

July 13.—Potting off herbaceous Calceolarias. Layering Carnations. Looking over Cucumbers and Melons, and stopping them where required. Weeding and picking over carpet bedding plants. Cutting up turf and putting it in water to soak for layering Strawberries on. Watering Pines all through; also Celery, Cardoons, and flower borders. Mowing and cleaning in the pleasure grounds, and rolling down all gravel and Grass that require it. Fruit in use for dessert: Pines, Grapes, Melons, Figs, Peaches, Nectarines, Strawberries, Raspberries, and Cherries.—W. G. P., *Dorset*.

St. Luke's Burial Grounds.—These, having been converted into a recreation ground, were opened the other day to the public. Some time back these burial grounds were in a most deplorable condition, and the church itself, a very fine specimen of classical architecture, built by a pupil of Sir Christopher Wren, was fast going to decay. An energetic committee, under the title of the Church Restoration and Burial Grounds Committee, with Bishop Claughton as its chairman, however, took the matter in hand, and worked so earnestly that on the 21st November last the restored church, upon which upwards of £7000 had been spent, was opened to the public, and now the gardens formed upon the old burial grounds, at a cost of about £1000, are also opened. They were formed by Mr. J. F. Meston, of 20, Spring Gardens, the well-known horticultural contractor.

SEWAGE IRRIGATION AT GENNEVILLIERS, NEAR PARIS.

The plain of Gennevilliers is situated on the north of Paris, about five or six miles from the centre of that city, and forms a long peninsula, so to speak, being almost entirely surrounded by one of the numerous windings of the River Seine. This spot, being one of the most barren and badly cultivated in the neighbourhood of Paris, was selected some ten years ago by the Prefecture of the Seine as a trial ground for ascertaining the value of liquid sewage as applied to the cultivation of vegetables. A couple of years ago a commission was appointed to investigate the matter from a cultural point of view, and a sub-committee, formed from amongst its members, and consisting of a number of well-known horticulturists, has just presented the Prefecture with a somewhat optimist report on the value of liquid sewage as an irrigating and fertilising agent in the cultivation of the commoner kinds of vegetables. The president of the sub-committee is M. Hardy, the Director of the Horticultural School at Versailles, and the reporter is M. H. Vilmorin, of the well-known firm of that name. The experiment was begun in 1869, when only 2¾ acres were put under sewage cultivation. The first trials being promising, this small plot gradually increased, until in 1877 it reached 134 acres. It must be remembered that around Paris vegetables are grown on two systems. First, we have the high culture system, in which forcing is carried to the highest perfection; and, secondly, ordinary vegetable growing on a scale suitable to the richness of the soil and the capital of the market gardener. It need hardly be said that the method of cultivation about to be described is only applicable in the latter case. The sewage is pumped into a large conduit pipe at Asnières, on the west of the city, and distributed over the fields in a series of open canals, as shown in the annexed figure. These canals are above the level of the soil, and are provided with sluices at regular intervals. The fields are divided into round-backed mounds by channels about 1 ft. deep and 4 ft. or 5 ft. apart, and running at right angles to each other. By opening the sluices in the sides of the canal the channels can be filled whenever it is found necessary. As the water is absorbed a deposit is formed at the bottom of the channels, which is collected from time to time and distributed over the beds. So much for the method of applying the sewage. Let us now speak of the results as obtained on the spot by the sub-committee. It must be premised that in several cases double crops have been obtained. Several Cabbage growers have grown a spring and autumn crop, or have alternated vegetables with green Rye for fodder.

The following is the list as given in the report:—

Artichokes . .	14,000 to 32,000 heads .	per acre
Cauliflowers . .	8,000 to 12,000 heads . (weighing from 10 to 16 tons)	,,
Garlic . . .	about 15 tons . . .	,,
Carrots . . .	,, 50 ,, . . .	,,
Celery . . .	,, 40 ,, . . .	,,
Cabbage . . .	,, 56 ,, . . .	,,
Onions . . .	24 to 32 ,, . . .	,,
Leeks . . .	24 ,, . . .	,,
Potatoes . . .	12 to 16 ,, . . .	,,
Pumpkins . . .	48 to 52 ,, . . .	,,
Salsify . . .	about 10 ,, . . .	,,

These results, it may be remarked incidentally, are evidently the best that could be obtained. A commission, appointed by the Minister of Agriculture in 1874, puts the Cabbage crop at a little more than half, and the Carrot crop about two-fifths of the amount stated above; we may therefore take the half of these figures as being somewhere near the truth, a remark that will apply to the other data quoted from this *couleur de rose* report. If we make a comparison between vegetables cultivated with and without sewage irrigation, goes on the reporter, we shall find that the crops yielded by the latter method are doubled, trebled, and even quadrupled in certain instances. In October, 1877, the first prize at the exhibition of the Société Centrale d'Horticulture was carried away by M. Rothberg, a market gardener at Gennevilliers, for the excellence of his vegetables, against all the market gardeners of the valley of the Seine. Land which has been hitherto perfectly barren may, therefore, be made to yield as much as that which has been well watered and fertilised. Trees and shrubs for transplanting thrive well if irrigation is discontinued some time before winter sets in. Peppermint, Absinthe, Angelica, and other plants used in distillation or perfumery may be grown successfully if similar precautions are taken on the approach of gathering time.

The following are the figures for three of these plants:—

Peppermint . .	16 to 20 tons per acre (two crops).
Absinthe . . .	44 to 48 ,, ,, ,,
Angelica . . .	11 tons per acre the second year.

This method seems particularly well adapted for vegetables whose value depends on the succulence of their leaves or stems, such as green forage, Cabbages, Celery, Endive, Salads, and green herbs for distillation. Young Almond and Peach stocks planted in spring and grafted in August throw out shoots 5 ft. and 6 ft. long, and nearly 3 in. in circumference at the base during their second year. Swiss Poplars and Willows also grow most luxuriantly, but the Osier succeeds best of all, especially when fertilised with the deposit that collects in the channels. With Potatoes the system does not succeed so well, but this may be accounted for by their necessarily receiving a larger amount of water than is good for them. The report then goes into the pecuniary part of the question, after having stated positively that the vegetables sent to the Paris market enjoy as great favour as those sent from other places. This part of the report seems somewhat exaggerated, for an Argenteuil correspondent informs us that although Cabbage and other vegetables grow most luxuriantly at Gennevilliers, their tissues are watery. Cabbages, the staple produce of the locality, are looked on with disfavour by the *sauer kraut* makers. He admits, however, that the Tomato thrives wonderfully at Gennevilliers, but no mention is made of it in the report. He adds that Asparagus, although it grows to a large size there, is of poor quality. The report goes on to say that before 1869 all that was grown on the plain were a few meagre crops of Oats and Rye, which rarely exceeded 13½ bushels to 14½ bushels per acre, but that now the fields yield at the rate of 27½ bushels per acre, and that Wheat and Lucerne are beginning to be grown; vegetables, however, seem to yield the most profit. The following figures are for rough crops; it must be remembered, therefore, that in some cases two, and even three, crops may be grown in one year.

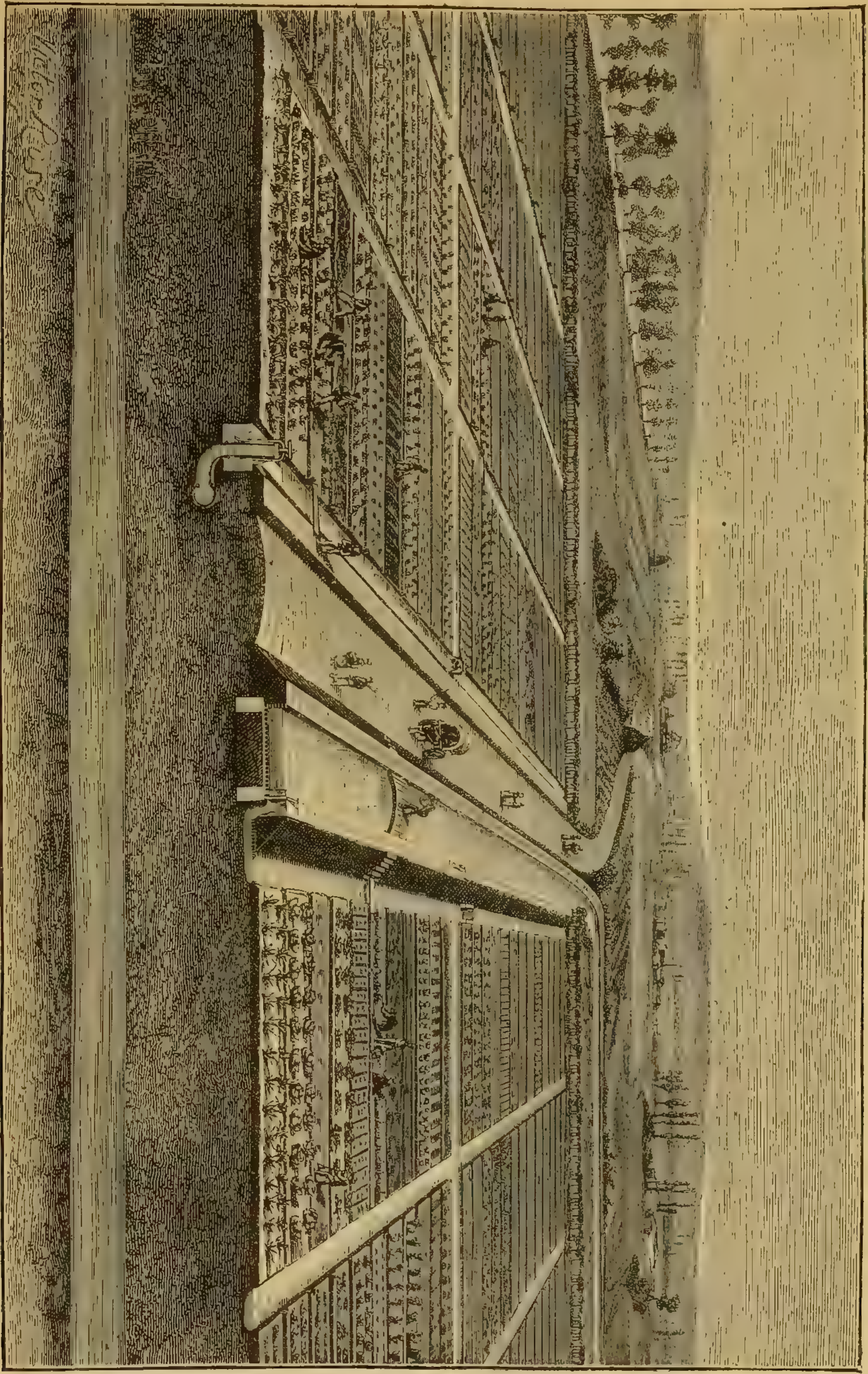
Cabbages . . .	£48 to £64 . .	per acre.
Cauliflowers . . .	£80 to £160 . .	,,
Carrots . . .	£48 . .	,,
Peppermint . . .	£64 to £80 . .	,,
Artichokes . . .	£80 to £96 . .	,,
Onions . . .	£140 . .	,,
Absinthe . . .	£64 to £80 . .	,,

or on an average £64 per acre—the exact amount realised at Aubervilliers and in the neighbourhood of St. Denis in market gardens cultivated in the ordinary way. No comparison is intended to be made between these results and those obtained under the highest cultivation, but only with those obtained by ordinary vegetable growers. The report states definitely that the Gennevilliers produce fetches the same price in the market as that from Aubervilliers and St. Denis. The amount of liquid sewage necessary for a given surface of ground does not seem to have been yet fixed. The sewage at present, being distributed gratis, it is very likely that an excess has been hitherto used. Up to the present time the rate of supply has been 24,500 cubic yards per acre per annum, but this amount is excessive, the consequence being that a large amount of the sewage matter has been absorbed by the earth without being decomposed by the plant. The amount of sewage produced by the city of Paris amounts to 110,900,000 cubic yards per annum.

C. W. Quin.

Geum coccineum fl.-pl.—Conspicuous amongst herbaceous plants at this season is the double-scarlet Geum, the blossoms of which are produced in profusion and as double as those of a Ranunculus. In a cut state they are most valuable, being brilliant in colour.—J. Groom.

Cure for Rats.—Baron von Baekhofen has discovered a cheap and simple method of exterminating rats. It consists of a mixture of two parts of well bruised common Squills and three parts of finely chopped bacon made into a stiff mass, with as much meal as may be required, and then baked into small cakes; these are put down for the rats to eat, and are said to effect their complete extirpation.



Method of Sewage Irrigation in the Plain of Gennevilliers, near Paris.

THE INDOOR GARDEN.

SWEET-SCENTED PLANTS.

There can be but one opinion as to the desirability of furnishing our conservatories and apartments with plants which are distinguished for their perfumes. From time immemorial sweet-scented flowers have been in great demand, and many plants owe their popularity to the delicate odours which they exhale. The Violet and the Mignonette, pretty though they may be, would hardly be held in such universal esteem were it not that they possess a sweetness that does not prevail amongst flowers in general. It is rather singular that the greater portion of our sweetly-scented flowers are of unassuming proportions, thus rendering them amenable to pot culture, and consequently adapted to the requirements of the million. It is not at all difficult to have a sweet-smelling plant in our window the whole year through, and just those which are possessed of the most pleasing perfume are of easy culture, and are, therefore, within the reach of all who may wish to enjoy them.

Probably, amongst scented flowers, there is not one which can boast of such universal popularity as does the Violet. Indigenous to our native isles, it is often the subject of pleasing associations and reminiscences; and the fine varieties which cultivation has given us have served to greatly increase its value. Every one who has the convenience of a frame should make a point of securing a few potfuls of Violets for winter enjoyment. Good clusters of the Neapolitan and double Parma are delightful in winter and early spring. It is seldom that one sees really good pots of Violets, and this is owing to the fact that no special provision is made to get them. It is true that Violets in favourable situations will, even if left to themselves, thrive and make luxuriant growth; but in a general way, to insure good results, they must receive some special care. A shady, sheltered position, where the sun goes off about midday, will fulfil their requirements. If exposed to the full glare of the sun, they are apt to get infested with red spider, and will not attain that hearty growth which is desirable. If young healthy pieces are set out early, in good soil, and are kept well watered during the summer, they may be potted up early in September, placed in a cold frame, and employed as required.

Next in order of merit comes the Mignonette, which is in truth everybody's plant. This favourite of the milliom may be had in bloom the whole year through; a result which, it is almost needless to say, is to be effected by judicious sowing. A few seeds should be sown in 4-in. pots several times during August and September; three plants should be left in each pot, and at housing time they should be placed upon a shelf in a light, dry, airy house, giving no artificial heat, admitting plenty of air, and suffering no lack of moisture at the root. They will thus flower successively during the winter months. Early in the year more seed may be sown, and a succession kept up until it comes in out-of-doors. Of Mignonette one can scarcely have too much, as what is not required for decoration in pots can be utilised in a cut state. A sprig or two of Mignonette amongst the table decorations, or in a bouquet, has a very refreshing appearance. The amount of space at the disposal of the grower will, of course, regulate the quantity grown.

A most delightfully perfumed plant is the Lemon-scented Verbena, as it is commonly called. It is an old and well-known plant, a general favourite, and is largely grown for market. It may be propagated from the half-ripened shoots, inserted in a shady place in the summer, or the young growing tips may be taken off in early spring, and placed in bottom-heat. As this plant is deciduous, and the fragrance lies in the foliage, it must be placed in heat to push it into growth if required early in the year. The plants should be cut in, leaving about 2 in. of wood, and as soon as they break they should be shaken out and re-potted in 4-in. pots, which size is quite large enough. This plant, if placed against a wall or in some similarly sheltered situation, is hardy enough, and a good bush or two is very pleasing in the summer season. The fragrance of this plant is very penetrating, and so peculiarly sweet that few are able to resist plucking a leaf. I once heard a lover of plants somewhat petulantly exclaim that he "would never grow it again," as "every one that came into the place carried away a shoot," so that the plants, much to his disgust, suffered from a chronic state of disfigurement.

In the Musk we have a plant which, great favourite though it now is, is likely to play a still more important part in floral decoration. We shall probably see ere long a new race of showy flowering plants which will retain the grateful perfume of the old species. Unless I am much mistaken, the Musk has a great future before it. Nothing can be more simple than the culture of this plant; the roots have merely to be divided into short pieces, placing about a dozen in a 4-in. pot, using some good, free, rich soil. Place in gentle heat, and support the young growth by means of three or four neat stakes, and pieces of bast being run from stick to stick. If liberally treated, they will form bushy masses of fragrance for early spring work. The tender, green foliage and bright yellow flowers present a very refreshing appearance.

Everyone is acquainted with the Heliotrope or Cherry-pie, of which there are now so many admirable varieties. Everyone, however, does not know how well adapted for pot culture this plant really is. There are now many varieties which are admirably suited to this kind of work, inasmuch as they are of a close compact habit and very floriferous. Some cuttings should be struck in May, and kept growing on until they become established in 4-in. pots, keeping them stopped till about the middle of August, when a portion should be allowed to form their flower-bud, pinching back the remainder a fortnight later. These plants will come well into flower during the early winter months, and are very acceptable when all outdoor bloom is past, for cut flower or other purposes. About February the plants may be cut back and started in warmth, when they will come into flower again in the spring. The Heliotrope may be planted out in a structure where it gets a little gentle warmth during the winter, or it may be grown on into specimens, in which latter condition it is but seldom seen. A specimen Heliotrope is, however, very pretty, and not at all difficult to obtain. It should be made to assume somewhat of a pyramidal form by training up one or two shoots in the centre, and judiciously pinching in the remainder. A good specimen may be formed in a season, when all that is necessary to do is yearly to prune it in, and when fairly started, shake away some of the old soil, replace with fresh, and place in a warm moist atmosphere for a time.

The plants above enumerated are those of the sweetest nature, which are the most easily grown. By their means one may command perfume the whole year through. There are, of course, many other sweet-scented plants, amongst which may be cited the Hyacinth, the Rose, and many of the Cyclamen persicum. The Lilac, the common Thorn, and the Sweet Brier may all be potted and started early into growth, where there is convenience to do so. The Gardenias, or Cape Jessamine, are remarkable for their perfume, but they demand an accommodation and manipulation which prevents their being so generally grown as they otherwise would be.—"Field."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Yucca filamentosa variegata.—This is the kind of plant one needs for conservatory or corridor decoration, for while it combines all the beauty of a variegated Pine and similar tender subjects, it flourishes in the temperature at which such places are kept during the greater part of the year. A good sponging and syringing overhead occasionally removes accumulations of dust to which plants are subject in such situations.—J. Groom.

Musa Livingstoniana.—Some years ago (Linnean Society's Journal, 1865, p. 128) Dr. Kirk dedicated what he regarded as a new species of Musa to Dr. Livingstone. Seeds of this Musa Livingstoniana, we learn from a German contemporary, are offered for sale by Thierrard, of Alexandria. To preserve the germinative power of the seeds they have been dipped in honey and then rolled in coal-dust. No doubt many persons would like to possess this plant on account of the interest attached to its name; but we may remind our readers, in order to prevent disappointment, that it is very much like Musa Ensete. Indeed Dr. Kirk says himself that in habit M. Livingstoniana is undistinguishable from M. Ensete. It is 18 ft. high, with a thick conical stem, bulged at the base, where it is of a purple colour. The leaf is nearly sessile, the midrib thick, and the blade broad, as in M. Ensete; but the seed is very different, and this is the only difference yet known, as the fruit has not been described. Dr. Kirk describes the seeds as small, tuberculated on the surface, rounded, with flattened facets, a deep hilum at one extremity, and a disk-shaped elevation. The testa is black, but not glossy, as in M. Ensete, and hard and brittle.—"Gardeners' Chronicle."

THE LIBRARY.

GUIDE TO THE ROYAL BOTANIC GARDENS, KEW.*

This new edition of a popular guide book is just what is wanted by the general run of visitors, who desire some little information on the more striking and curious plants cultivated in our national garden. Containing many woodcuts and concise accounts of the uses, &c., of the plants spoken of, it is made still more interesting by the very numerous quotations from all sorts of books—paragraphs describing the beauty of the trees and plants in their native habitats and the impressions they gave the writers. In the present edition new matter has been introduced and information culled from various sources previously unavailable; *e.g.*, several newly-published books are quoted from, or at any rate books published since the date of last edition, such as Flückiger's and Hanbury's "Pharmacographia," and Belt's "Naturalist in Nicaragua." From the former work the following extract is given: "The Fig is said to have been introduced to England by Cardinal Pole, where they still exist in the garden of Lambeth Palace. But it had certainly been in cultivation at a much earlier period. There is record of its cultivation in the thirteenth century." A plan of the pleasure grounds is given in this edition, by means of which many of the collections of forest trees and shrubs can be easily found. Altogether, care seems to have been taken to bring the "Guide" up to date and to render it as useful as possible. It, however, is by no means perfect, for there are many errors which certainly ought never to have been allowed to creep into it; for instance, Retinispora for Retinospora, Callitius for Callitris, Notochlæna for Nothochlæna, Alocasia Lowei for A. Lowi (a mistake, by the way, continued from previous editions). Again, we are told specially to note many plants which a careful search in the spots indicated fails to discover. Amorpha fruticosa is not to be seen on lawn D, and the Opuntia with the cochineal insects feeding on it only exists—at any rate, the insects only exist—in the printer's ink. Cheirostemon platanoides, the Hand-plant of Mexico, has long disappeared from its bed in the winter garden, although the paragraph concerning it remains in the present "Guide." After mentioning Fuchsia excorticata, a New Zealand species, it is stated "that, with this and another exception, the large genus Fuchsia is exclusively South American;" this, however, is not the case, as there are several Mexican species, and at least another New Zealand one in addition to F. excorticata. Now that carnivorous plants are attracting so much attention, the compartment in which they are grown, recently built at the end of the Orchid house, might profitably have been given in the plan and much worry both to inquirers and to those inquired of would thus have been saved. With regard to the great Palm stove, we are now told that the interior is heated by six boilers (of which three or four are usually all that are required in winter), with which a system of over 19,500 ft. of hot-water piping, 4 in. in diameter, is connected; the last edition estimated the length of 4½-in. pipes at about 24,000 ft.

HOLMES' BOTANICAL NOTE-BOOK.†

If students of botany will follow strictly the lines laid down for them in this little work they cannot fail to acquire a good foundation on which to erect a thorough superstructure. The author is perfectly correct in saying that too often the names of plants merely are learned, while a corresponding knowledge of their structure and of the reasons why they are placed in certain Natural Orders is not obtained. No doubt this state of affairs is owing to the numerous exceptions to given rules met with by students, and also to the great number of technical terms found in so many text-books. In the present work only the terms most frequently found in floras, &c., are given, and these are thoroughly and succinctly explained in a glossary. Two charts of the Natural Orders are given, and in these the diagnostic characters are reduced to a minimum as far as possible, those which are most easily observed having been chosen in preference to the more minute, whilst all the exceptions have been indicated in an appendix. With this help it becomes a comparatively easy task to find out the Order of any plant belonging to the more important Natural Orders and of all plants indigenous to Britain. Three diagrams are given—Scarlet Geranium, Daisy and Dandelion, and Narcissus. All the parts of the plant and flower are given in detail, and each part has its name printed near it. The plants purposely chosen for illustration are very easily obtained. The Daisy shows both ray and disc florets, but as it has no pappus, the Dandelion is figured, which has. Explicit directions are given for examining plants, microscopically and otherwise, chapters on how to describe a plant in the schedules contained in the book, how to use the charts, &c.; also a floral calendar or list of plants with their periods of flowering. Although this book will be specially welcomed by medical and pharmaceutical students, we can heartily recommend it to all who are commencing the study of botany.

The Album Van Eeden No. 1., 1878, just received contains coloured plates of a single early Tulip with variegated leaves called Yellow Prince; Sprekelia (Amaryllis) formosissima, a well known crimson kind; a group of Calochorti, of various colours; Lilium Thunbergianum aureum maculatum; a group consisting of charming varieties of the beautiful Sparaxis tricolor; and two varieties of Gladiolus floribundus. These are well drawn and beautifully coloured. Their only fault is the ground colour, which is too dark.

The Official Handbook of the National Training School for Cookery.*—A useful clearly written book, and a decided improvement on the usual cookery book, being so explicit in the case of small details, which in themselves are necessary to produce a good result in cooking. The portion of the book devoted to vegetables is the least instructive. Very few receipts are given, and these are of the most ordinary kind. Hardly any mention is made of fruits, a strange omission, seeing that the work is compiled for the use of the National Training School for Cookery.

TREES AND SHRUBS.

IMPORTANCE OF THE CATALPA TREE FOR ECONOMIC PLANTING.

By C. S. Sargent, Director of the Arboretum of Harvard University.

The Catalpa (Catalpa bignonioides), long known and generally planted as an ornamental tree, has of late years begun to attract considerable attention as offering peculiar advantages for economic planting. The wonderful durability of the wood of this tree, long ago pointed out by General Harrison, but until lately imperfectly understood; its rapid growth in good soil, and freedom from the attacks of insects, make the Catalpa a most promising subject for general planting in rich, strong soil, in any portion of the United States south of the 42nd parallel. Further north it often suffers in severe winters, especially when young; and in the New England States, except in exceptional situations, the soil is not rich enough to make the planting of this tree as profitable as that of many others better suited to reach maturity in that section of the country.

The wood of the Catalpa is soft, light, close-grained, and susceptible of a good polish. In general appearance it closely resembles Chestnut, but, unlike that wood, it is easily "filled," and shows none of the tendency to warp or start which renders Chestnut unfit for the best cabinet work. Should the wood of the Catalpa ever reach the market in quantity, it will rank with Butternut for cabinet and architectural work, and will make a valuable addition to the hard woods now so freely employed in interior decoration. It is, however, for railway ties, fence and telegraph posts, Hop and Vineyard poles, and such purposes that the wood of the Catalpa is particularly adapted, and it is for these and similar employments, where a wood capable of resisting decay when exposed to the soil and weather is required, that Catalpa will probably be more profitably employed than the wood of any other tree suitable for cultivation over so large an area of the United States.

Why the soft wood of this fast-growing tree, which is traversed with large open ducts, nearly as broad as those of Red Oak—a wood which notoriously rots very quickly—should resist decay longer than almost any other of which we have any knowledge, is not clear. And this fact presents a problem for which a chemist may perhaps be able to find a solution. The fact, however, is undeniable. Samples of Catalpa wood are before me, taken from the top and bottom ends of posts which are known to have stood in the ground in Indiana for seventy-five years, and which are still perfectly sound; and many other similar instances of its power to resist decay are recorded. Another peculiarity of the Catalpa is its small amount of sap-wood or living tissue, so that, unlike the Red Cedar and most exogenous trees, in which the soft and worthless sap-wood turns by death into durable heart-wood only at the end of many years of growth the Catalpa produces heart-wood when the stem is scarcely 1 in. in diameter. For this reason the Catalpa has not an equal for fence posts and different sorts of small stakes, for which, if other woods are used, many years of growth must be sacrificed in order to avoid the rotting away of the outer and living layers, which have no power to resist decay.

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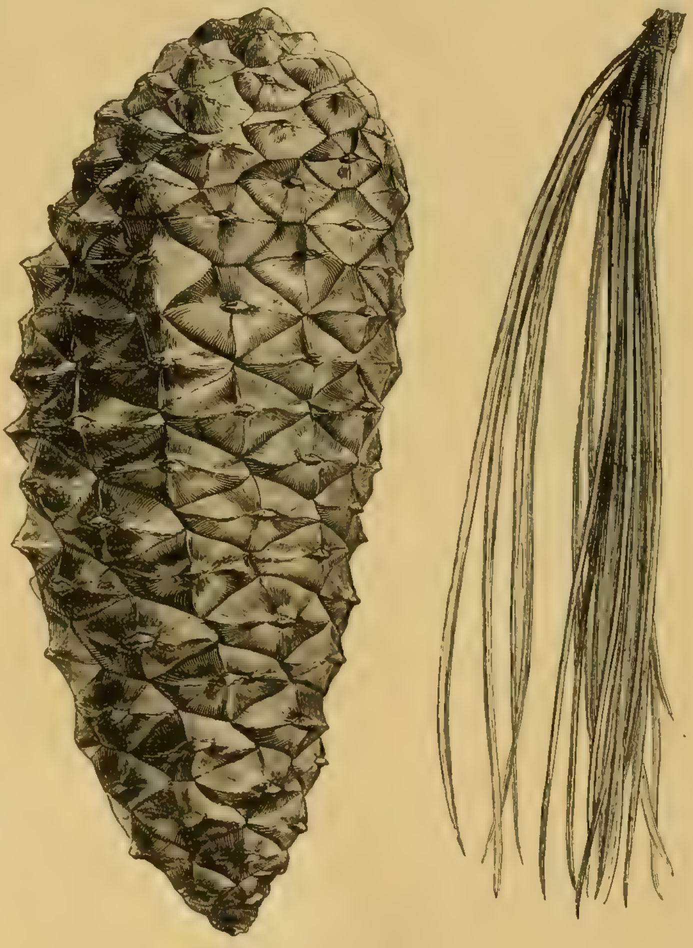
* "Guide to the Royal Botanic Gardens and Pleasure Grounds, Kew." By Daniel Oliver, F.R.S., F.L.S. 28th edition. London: Macmillan & Co. 1878.

† "Botanical Note-book, or Practical Guide to a Knowledge of Botany." By E. M. Holmes, F.L.S. London: Christy & Co. 1878.

* London: Chapman & Hall.

The few experiments which have been made with Catalpa wood for railway ties seem to promise that it will be of great value for this purpose, although such experiments are neither frequent enough nor of sufficiently long duration to be entirely conclusive; and it is evident that a longer test than it has yet been subjected to is necessary to demonstrate that this wood has the power to resist the crushing of the rails and to hold spikes equally well or better than Chestnut or White Oak, which, all things considered, are the best North American woods yet extensively employed for this purpose. It is but fair to say, however, that many practical railway men of excellent judgment, who are carefully watching in the West the Catalpa ties, speak with great confidence of their value, and already very large experimental plantations of this tree are being made in Eastern Kansas by railroad directors of that State, with a view of raising their own ties in the future. The Catalpa would seem, then, to be one of the most valuable trees which our cultivators, suitably situated, can plant. It grows readily and rapidly from seed, and can be very easily transplanted either in the spring or autumn. If planted thickly—say 4 ft. between the plants each way—they will run up with tall, straight stems, and make trees very different in appearance from the short-stemmed, round-headed, and rather distorted-looking specimens which are generally met with in ornamental grounds, especially in the Northern States. The thinnings of a grove of Catalpa, if planted in good soil, will in a few years be large enough for Vineyard stakes; in a dozen years the alternate plants will each make two or three fence posts, and the remainder will each, in twenty-five or thirty years from the time they were planted, probably be large enough to be cut into five or six railway ties. Cultivators to whom the annual expenditure for posts, fencing, or stakes is very considerable, will do wisely to plant every year a few hundred or thousand Catalpas, according to their circumstances, and thus insure for themselves an abundant supply of home-grown material. Should the objection be raised that the planter of trees must wait too long for his returns, it must be borne in mind that the money value of land will be largely increased if it has upon it a thrifty growing grove of Catalpas, or other valuable trees, whatever their age may be, and that purchasers of land in the near future are going to look with considerably more attention than in the past at the size and nature of the wood-lots.



Leaves and Cone of Pinus Pinaster.

A well-marked variety of the Catalpa is recognised in cultivation in some of the Western States, flowering two weeks earlier than the ordinary form, which it is said to greatly excel in hardiness, with larger white flowers and more upright, rapid growth. This variety, which reproduces itself from seed, is the more desirable to plant. Seeds of it can be procured through Mr. E. E. Barney, of Dayton, Ohio, who has long taken an active interest in the Catalpa tree, and has done much to make its merits more generally known. He has lately published a pamphlet on the subject ("Facts and Information in relation to the Catalpa Tree"), which should be read by all, and their number should be legion, who intend planting this tree. Mr. Barney has favoured me with several large and instructive sets of wood specimens of the Catalpa, with which I have been able to enrich the principal museums of economic botany in this country and Europe.—"New York Tribune."

THE CLUSTER PINE.

(PINUS PINASTER.)

This well-known Conifer was first introduced to Britain by Gerard about 1596; the original trees, it is said, were planted in the garden of Bishop Compton, at Fulham, and probably some of them are still in existence. The Pinaster is a native of France, Spain, Portugal, and other parts of Continental Europe, where it is extensively grown, mostly near the sea-coast, in light, sandy soils, it being naturally adapted for maritime situations. There are now many varieties in cultivation more or less distinct, some with peculiarities of habit and growth, others that differ from the species in the development of cones, some of which are borne in clusters of twenty or more in a whorl. The variety Lemoniana bears single cones on the ends of the leading shoots, so much do the varieties vary as to coning; the cones of the type are large and ornamental, of a bright brown colour, and are chiefly grown in whorls of four or five in number, but sometimes more. This Pine is invaluable for planting on sandy stretches along the sea-coast where shelter belts are needed. As a proof how vigorous and healthy it grows close to the sea, it may be seen at Hastings, on an exposed hill adjoining the shore, thriving beautifully where no other Pine succeeds so well. On the coasts of the Bristol Channel and many other parts of the west, examples of the Pinaster may often be noticed standing out boldly where but few other trees can exist, bearing the brunt of terrific western gales without injury. Indeed, it is essentially the Pine above all others for planting on the sea-shore for shelter or ornamental effect, but it should not be crowded together when planted in belts or masses, but should be thinned out regularly and gradually, so as to allow its wide-spreading branches room for full development. It has a peculiar habit of growing crooked in the stem, and often in a leaning direction, as if threatening to uproot, but in reality rarely doing so, for it is a comparatively deep-rooting Conifer. As an ornamental tree, when well grown and fully matured, it ranks amongst the quaint, picturesque type, and its foliage is of a deep green colour. The timber is coarse and of no great value compared with that of other kinds of Coniferous trees.

G. B.

ANSWERS TO CORRESPONDENTS.

Pink Hawthorns.—I want to know the proper time and how to strike cuttings of the Pink Thorn, so as to have some pots for the conservatory.—H. S. [The Pink Thorn, or any other variety of Thorn is most easily propagated by budding on the common Hawthorn in July or August, according to the condition of the stock and bud. The quickest way of having Thorns in pots for the conservatory would be to procure young plants from a nursery and pot them.—O.]

Plants for Exhibition. — *Aberian.*—To your first question we say "Yes," unless the schedule states that fine-foliaged stove or greenhouse plants are required. 2. You can show all the Ferns you name as exotic Ferns, but not as stove Ferns. 3. See separate article on this subject. 4. All the plants named are well adapted for the purpose you mention.

Leaf-mining Insects.—Can you tell me what grub it is I send you within Cineraria leaves. My plants last year, although constantly hand-picked, were destroyed by it, and, unless you can suggest a remedy, I fear the same result this year. Would some solution of paraffin added be of any use.—T. W. H. [The mines in question I believe to be executed by the larvæ of a small moth, about which I hope to give more information shortly, as many of the larvæ are in the chrysalis state, and will, I expect, soon make their final change. The only way of hindering the spread of the insects is to pick off the affected leaves and burn them. When first observed, a gentle pressure of the leaves between the thumb and finger at the spot where the larva is working will destroy it, and prevent further disfigurement of the leaf.—W. W. S.]

Names of Plants.—*Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible,* i.e., *both stem, leaves, and flowers, and fruit, when possible. We cannot attempt to name plants from single leaves. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as Fuchsias or Pansies, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.*——*C. M. O.*—1. Omphalodes linifolia. 2. Phlox Listoniana. 3. Hieracium aurantiacum. 4. Polystichum vestitum (syns.—Aspidium vestitum, Polypodium vestitum). Native of New Zealand. *H. D. H.*—Odontoglossum cristatum. *Mrs. M.* The Rose is a fine form of Rosa pimpinellifolia. The other plant is Myrtus Kraussi. *J. E.*—1. Matricaria Chamomilla. 2. Polygala calcarea. 3. Prunella vulgaris. 4. Medicago lupulina. *A. A.*—The Ground Ivy (Glecoma hederacea.) *G. T.*—Cibotium princeps is a Tree Fern. The Begonia looks like one which was raised some time ago at Chiswick, the name of which we do not at the moment recollect.

Thinning Lilies.—I have some large clumps of the commoner kinds of Lilies which I want to reduce in number from twelve or twenty to about six. I want to know which to leave. I have read carefully the valuable information in The Garden on the root-life of Lilies by "Dunedin" and others, but I am not clear as to whether each bulb will always grow on from year to year until it flowers. If this be so, in dividing a clump I should leave those bulbs which have not flowered this year, as they should do so next year. I suppose the best plan is to make such a change soon after the plants have flowered, taking care to keep the roots moist.—F. Clowes, *Windermere.* [I would recommend Mr. Clowes to replant in each clump five or six of those bulbs that have flowered this year. From the manner in which he puts his question, it appears to me that he has not yet noticed that within all bulbs that flower one year are the successional bulbs which will flower next year, and their successional bulbs will do the same the following year, and so on. He is right, according to my doctrine, in supposing that the best plan is to make such a change very soon after each class of plants have flowered. This plan I can recommend, with the greatest confidence, as being the means of causing the plants to flower stronger and longer.—"Dunedin."]

Trees Killed by Field Mice.—If "R. F." (see Vol. XIII., p. 629) will try the following plan, he will, I believe, keep mice from injuring his young trees. Some years ago there was a young plantation here of Ash and Oaks, and amongst them a quantity of young Holly bushes. Many of these trees and Hollies showed one summer that they were in a dying state; and, on examining them, all were found to have been denuded of their bark at the surface of the ground by field mice. The long Grass hid them till the injury to the trees became apparent. A mode of destroying the mice was therefore tried by sinking glazed earthern pots or "panshons," as they are called here, into the ground, their tops being left level with its surface, and half filling them with water, with a little Scotch oatmeal dusted over it. Hundreds of mice were found drowned in these traps in a short time, and their numbers were so reduced, that the destruction of the trees was stayed. Large garden flower-pots, I have do doubt, would answer the same purpose if the hole in the bottom be well plugged, so as to hold water.—William Tillery, *Welbeck.*

Questions.

Weeds in Ponds.—How can I best get rid of weeds in a large piece of water?—E. C. S.

Preserving Rose Leaves.—What is the best way of preserving Rose leaves for keeping in a room for the sake of their perfume?—Subscriber, *Belfast.*

Sudden Failure in Raspberries.—Can any of your readers inform me of the cause of a sudden failure in the growth of my Raspberry plants? Up to this time I have been most successful in growing Raspberries, being careful in choosing the best varieties. The last renewal was about five years ago. Every autumn, at the time of removing the old wood, I apply to the surface of the ground over the whole plantation a full top-dressing of farmyard manure. This year the plants are gradually withering away without any prospect of fruit, and the young canes for the next year's supply are scanty and wanting in vigour. I have hitherto trained in a semi-circular fashion, bending the head of each plant, consisting of four or five canes, to that of its neighbour; I have, however, never found any bad result from this method of training. Can any remedy be suggested? or is it best to renew the whole plantation?—Edward Thomas, *Welfield, Builth.*

DESTROYING SLUGS.

Twenty years ago my house, in the suburbs of Bristol, was practically in the country, being surrounded by small dairy farms and nursery grounds. Birds of all kinds were abundant, and the locality was so open, that one of my neighbours, about 250 yds. off, once found a covey of partridges in his kitchen garden. Since then the speculative builder has had a glorious time of it, and from my windows I can now see houses containing more than 3000 persons where, fifteen years ago, there was not a population of more than two or three families. As a natural consequence, the birds, save the inevitable sparrow and jackdaw, have disappeared. It is only in this way that I can account for my inability of late years to grow any tender seedlings. Last summer, after repeated efforts, I found all my labour and expense thrown away, and I came to the conclusion that my concealed enemy—for there was nothing to be seen—was the slug. At Michaelmas I resolved on a campaign, and, by the help of a few greased Cabbage leaves and an extemporised lantern, I made the following victims:—

Week ending Sept. 29	1750
„ Oct. 6	1480
„ Oct. 13	1017
„ Oct. 20	690
	4937

Here let me stop for one moment to show the danger of arguing upon too narrow foundations. Looking over the above figures, I made certain that I had broken the back of the enemy, and that another week or two would clear my dominions. Imagine, then, my horror as the results came out, which I shall now set down:—

Week ending Oct. 27	1997
„ Nov. 3	1792
„ Nov. 10	1894
„ Nov. 17	1215
„ Nov. 24	432
	12,267

Cold weather had now set in, and the work became, literally as well as metaphorically, not worth the candle. With the return of spring, however, I renewed the campaign, and the following is a summary of the results:—

February	825
March	326
April	1490
May	1329
June	1484
	5454

You will perceive that since the latter end of September I have caught over 17,700 slugs (including a few hundred snails). Perhaps you may suppose, however, that my ground is of considerable extent. In point of fact, a gardener would not call it a garden at all; it is but a strip about 30 yds. long and 10 yds. wide. Supposing it to be about 300 square yds., I have got, on the average, about sixty slugs upon each square yard. I have, unhappily, no reason to believe that my work is even half accomplished. This evening (July 1) a fresh attack on my enemies has brought me in only two or three short of 150 with which to commence the labours of another month, that is, if I continue the task, which seems utterly endless and hopeless.

An Amateur.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY'S EVENING FETE.

June 27.

The floral decorations, which formed part of the entertainment on this occasion, were of a very interesting character, and visitors repeatedly stopped to admire the banks of beautiful annuals furnished by Messrs. Carter & Co., of Holborn, and which are still on view. The best floral decorations were shown by Messrs. E. G. Henderson, of the Pine-apple Nurseries. They consisted of fire-place arrangements, so skilfully ornamented as to elicit general admiration. The one which obtained the first prize had a mantel-shelf covered with groups of Mosses and Ferns, out of which grew fine-leaved Caladiums. A plant of Dendrobium thyrsiflorum graced one corner, and Odontoglossum Alexandræ the other. The fire-place itself contained a well-grown specimen of Eulalie japonica zebrina, surrounded by brightly-flowered Masdevallias and a few Ferns. At each corner was a grand plant of Todea superba, and all vacant spaces were filled with Club Mosses. A light, creeping Selaginella, trained up the marble supports, gave the whole a light and elegant appearance. The other arrangement, not in competition, was highly commended; it was in every way equal to the one just described. The best dinner-table arrangement was contributed by Mr. Soder, gardener to O. Hanbury, Esq., Weald Hall, Brentford. The centre piece consisted of a graceful Palm (Cocos) set amidst blooms of white Water Lilies, crimson Cacti, Anthuriums, and Cattleyas, the stem of the Palm being partly encircled by a spike of flowers of Odontoglossum Alexandræ. At each end were trumpet-shaped vases, the saucers of which were filled with white Gladioli, Dendrobium Bensonæ, double pink Pelargoniums, and pink Cornflowers. The trumpets contained Grasses, amongst which were a few blooms of Odontoglossum gloriosum and blue Cornflowers. A dozen small glasses, placed round the table, contained blush Rose-buds and Ferns, and the effect as a whole was charming. The best ball-room bouquet came from Mr. Green, Victoria Street, Belgravia. It was wholly devoid of that formal and stiff appearance so frequently seen in bouquets, and was of a very appropriate size. It consisted chiefly of white flowers, such as those of Stephanotis, Bouvardias, Tuberoses, Hoyabella, sprays of white Spiræa, and Ferns. To these were added a few flowers of a pink Bouvardia and of Aerides odoratum, just to give a little colour. Several good head-dresses were shown, and, as a rule, the whole arrangements were excellent.

NATIONAL ROSE SOCIETY.

June 29.

This, the second great show of this Society, took place last Saturday at the Crystal Palace; though a good one, it was not equal in some respects to that of last year, and the arrangements were somewhat unsatisfactory. In the first place, there were many vacant places on some of the stages, which might easily have been avoided. This was caused, we learn, through many exhibitors who brought their Roses keeping them under the benches instead of staging them, a practice neither creditable to the exhibitors nor fair to the Society. In the next place, no provision had been made for allowing representatives of the horticultural press to visit the show until it was opened to the public, an oversight which caused much unnecessary trouble and inconvenience, for when the crowd of visitors arrived it was impossible to take more than a passing glance at the Roses. In the third place, the tickets announcing the prize collections, instead of being associated with the exhibitors' cards, were in most cases stuck carelessly on to the sides of the boxes, causing considerable trouble in finding them. No sooner, too, had the judges finished their work than large placards, bearing the names of the growers, were placed on their productions, thus greatly impairing the effect of the exhibition.

The Roses, on the whole, were exceedingly good, and a large and fine collection from Messrs. Wm. Paul & Son added greatly to the effect of the show. The classes for blooms of one variety were well filled, and the nurserymen's classes were all that could be desired. The collection of old Roses from Mr. Stadden was exceedingly interesting, and, with the exception of the few mistakes just alluded to, the show, we think, may be fairly pronounced to have been a success.

Nurserymen's Classes.—In the premier class for seventy-two distinct trusses there was a fair amount of competition, five collections being shown. Messrs. Cranston & Co., Hereford, had magnificent blooms of Madame Lacharme, the brilliant rosy-crimson Horace Vernet, very large and exquisitely-formed examples of Madame Eugenie Verdier, the white Niphetos, and La Havre, an elegantly-formed flower of a bright vermilion colour; with these were effectively associated brilliant blooms of Xavier Olibo, Reynolds Hole, the beautiful pink Annie Laxton and Madame Etienne Levet, and the flesh-coloured Duchesse de Vallombrosa and Captain Christy. Mr. Cant, Colchester, had the next best collection, the principal kinds in which were medium-sized, but beautifully-coloured, examples of Reynolds Hole, Star of Waltham, the brilliant Charles Lefebvre, and the clear pink François Michelon. The white Souvenir de Elise and the creamy Devoniensis formed a striking contrast to the velvety-crimson Duke of Edinburgh and the bright red Horace Vernet. In the same class Messrs. Paul & Son had fine examples of Jean Liabaud, La Duchesse de Morny, Baron Rothschild, and Souvenir de Elise. In other collections the best blooms were Captain Lamure, Souvenir d'un Ami, Maréchal Vaillant, and Madame Hippolyte Jamain. In the class for forty-eight Roses, three blooms of each, Messrs. Cranston & Co., Hereford, had good examples of the pink Edward Morren, finely-formed flowers of Marie Baumann, the brilliant La Havre, Madame de St. Amand, the brilliant scarlet Exposition de Brie, and the bright rosy-pink Madame C. Wood. The next collection in point of merit came from Messrs. Keynes & Co., in which were elegant blooms of Souvenir de Elise, Madame Marie Rady, and Niphetos. In the class for thirty-six single blooms there were nine exhibitors, the most successful one being Mr. Turner, Slough, who had Souvenir de Elise, finely-coloured Maréchal Niel, the rosy-magenta Madame Ferdinand Jamain, and Paul Neron. These were shown off to good advantage among fine blooms of Xavier Olibo, maroon-crimson Louis Van Houtte, La Rosiere, and the beautiful rose-coloured Madame George Paul. In the same class Messrs. Curtis had beautiful fresh blooms of Duke of Wellington, Marquise de Castellane, the bright Avocat Duvivier, and Star of Waltham. The other collections were grand blooms of Paul Neron, Captain Christy, and fine examples of Marie Baumann, whilst the pure rose Antoine Ducher and the maroon-crimson-tipped Reynolds Hole were probably never shown better. Horace Vernet and Miss Hassard were also excellent. The best twenty-four Roses, three blooms of each, came from Mr. Cant. Amongst them were Xavier Olibo, the delicate pink Baroness de Rothschild, the rich cream-coloured Devoniensis, and the golden-centred La Boule d'Or. Fisher Holmes was excellent in colour, and associated effectively with the bright rosy-magenta Ville de Lyons and the deep rose Marie Rady. Messrs. Keynes had very fine ivory-white blooms of Souvenir de Elise, the magenta Docteur Andry associated with Reynolds Hole, and the pink-flushed Catherine Mermet. In other collections the best blooms were the Countess of Oxford, La Havre, and Horace Vernet. Mr. Turner had the best twenty-four single blooms, among which were even medium-sized examples of Marguerite Brassac, the bright crimson Lord Macaulay, and Charles Lefebvre. From Messrs. Curtis, Sanford & Co. came good blooms of Madame Charles Wood, General Jacqueminot, the cream-coloured Rubens, and Countess of Oxford. In other collections were good blooms of Annie Laxton, Marie Rady, Fisher Holmes, Horace Vernet, the rosy-pink Camille Bernardin, and the deep crimson Abel Carrière. Messrs. Mitchell & Sons had the best twelve Tea or Noisette Roses, among which Souvenir de Elise Vardon was probably never seen more perfect; Devoniensis was beautiful; also the white Julie Mansais, and Madame Margottin. Mr. Cant had the blush Souvenir d'un Ami, the creamy-white Madame Villermoz, and Niphetos in fine condition; and in other collections we noticed admirable blooms of Souvenir de Elise and Madame Hippolyte Jamain.

Open Classes.—The best twelve new Roses, not in commerce, came from Messrs. Paul & Son, Cheshunt, consisting of finely-formed, smooth-petalled flowers of the fiery maroon-crimson Jean Soupert, the clear pink Annie Laxton, the brilliant Duke of Connaught, and Sultan of Zanzibar. Mr. Turner, of Slough, had John Stuart Mill, rosy-scarlet; Marguerite Brassac, deep rose; Rev. J. B. Camm, lively pink; and Henry Bennet, bright crimson, in good condition. The best twelve blooms of Etienne Levet came from Messrs. Paul & Son; they were of a fine carmine colour, large, and full. Messrs. Keynes & Co. had smaller and darker-coloured blooms of the same variety. François Michelon was poorly represented; the best blooms of it came from Messrs. Keynes & Co. Messrs. Cranston & Co. had twelve fine even blooms of Jean Liabaud, as did also Messrs. Paul & Son. Mr. Turner had the best twelve blooms of Maréchal Niel, and Messrs. Paul & Son the best Marguerite de St. Amand. In the class for twelve blooms of any dark-coloured Hybrid Perpetual, not named in the schedule, Messrs. Paul & Son were awarded a first prize for fine examples of Marie Baumann. Mr. Cant had good blooms of Horace Vernet, and Mr. Laing also showed Marie Baumann. The best light kind was Captain Christy from Messrs. Paul & Son, the blooms of which were very large and of a fine flesh colour. M. Ridout, gardener to J. B. Haywood, Esq., Reigate, had very large and even blooms of the delicate silky-pink Baroness Rothschild, and the next best kind was the beautiful white Madame Lacharme.

In the class for twelve Tea Roses of any kind, not named in the schedule, Mr. Cant won the first prize with remarkable blooms of Boule d'Or, a beautiful golden-coloured Rose with petals of great substance. This was one of the finest stands of Roses in the exhibition. Messrs. Keynes & Co. had good blooms of Souvenir de Elise, and Mr. Pince had Jean Ducher in good condition.

The best new seedling Rose came from Messrs. Wm. Paul & Son, Waltham Cross, and consisted of a bright red kind named Duchess of Bedford.

In the class for old Roses in commerce previous to 1840 there was only one exhibitor, viz., Mr. Julius Stadden, Chipping Norton, who showed over fifty kinds. To many this collection was a highly interesting one; it afforded an opportunity of selecting certain kinds suitable for the wild garden, and served to show the improvements that had taken place in Roses since that date. It contained the single striped York and Lancaster, the white Globe Hip (so fine for small bouquets), Lamarque, yellow Provence (a fine Rose, but one which does not often open well), the creamy-yellow Eliza Sauvage, Chenedole (a Rose shown in every collection about twenty years ago), the common Moss and old Cabbage, the former said to be a sport from the latter, and a host of sorts the names of which were unknown.

The best twelve Roses in the amateurs' classes, three trusses of each, came from Mr. John Quennell, Brentwood, and contained good blooms of the crimson Xavier Olibo, Marie Baumann, La France, and Paul Verdier. In the same class Madame Lacharme and François Fontaine were well represented. Mr. Soames, Freeman Park, had the best twelve single trusses, among which the best were Captain Christy, the brilliant scarlet-purple-shaded Dr. Andry, and the pink Mons. Norman. Professor Adams, the Observatory, Cambridge, had good examples of Xavier Olibo and Madame Bravy. The best blooms in the class for six trusses were those of Maréchal Niel, Reynolds Hole, Marquise de Castellane, Lord Macaulay, Devoniensis, Captain Christy, and Duke of Edinburgh, and the best examples of suburban-grown Roses were those of Charles Lefebvre. The best twelve blooms of Tea or Noisette Roses came from Mr. Waterlow, Reigate, and included good examples of Jean Ducher, Louise de Savoie, and Madame Berard. In other collections Cheshunt Hybrid, Catherine Mermet, the yellow Madame Margottin, and Madame Villermoz were the best blooms. In the class for eighteen Roses, six varieties, three trusses of each, Mr. Hollingworth, Turkey Court, Maidstone, sent good blooms of Maréchal Niel, Madame Villermoz, and Souvenir d'un Ami.

Miscellaneous.—Amongst Messrs. William Paul & Son's extensive collection of Roses, the most striking were Duke of Edinburgh, Fisher Holmes, the white Madame Lacharme, the rosy-magenta Alfred Colomb, Countess of Oxford, and Victor Verdier. The same firm also showed stands of new Roses, including the brilliant deep rosy-magenta-shaded May Quennell (one of the best new Roses that has been raised for some years), the scarlet Duchess of Bedford, Duke of Connaught, Madame Prosper Saugier, and a golden-yellow Tea Rose named Madame Lazarine Poixeau, fine in a bud state for bouquets. Mr. Corp, Oxford, sent a large collection of Tea Rose buds cultivated on the seedling Brier. Mr. Rumsey, Waltham, also sent a good collection of Tea Rose buds, as did also Mr. Mayo, Oxford.

ROYAL HORTICULTURAL SOCIETY.

July 3.

The exhibits on this occasion, though but few, were of an interesting description. New Roses from the Cheshunt, Waltham, and Slough nurseries, a group of new Lilies from the Colchester Bulb Company, and a fine display of Verbenas from Mr. Cannell, Swanley, formed the chief features.

First-class Certificates were awarded to the following new flowers, plants, and fruits:—

Rose Penelope Mayo (Turner).—A Hybrid Perpetual of English origin, and one which promises to become a most useful kind for exhibition purposes. Its flowers, which are a brilliant carmine-red, are large and finely formed.

Rose Dr. Sewell (Turner).—Without doubt one of the most beautiful English-raised Roses ever shown. It resembles Xavier Olibo, and is somewhat in the way of General Jacqueminot, but is deeper in colour. It is said to be a good grower, and no good collection of Roses will probably be long without it.

Rose Duchess of Bedford (Paul & Son).—An excellent Rose, previously described in The Garden, and shown better on this occasion than hitherto.

Pelargonium Elfrida (V. Lemoine).—An Ivy-leaved kind having large trusses of clear rosy-violet-coloured well-formed double blossoms. A variety of great value for decorative purposes.

Pelargonium A. F. Barron.—An Ivy-leaved kind of bushy growth having double flowers, the colour of which is a pinkish-rose.

Pelargonium Lucie Lemoine (V. Lemoine).—A kind with dark glossy green Ivy-like foliage, bearing abundance of large, delicate purple-shaded, whitish blossoms. A useful and attractive variety.

Freesia refracta alba.—A white-flowered kind, beautifully scented, and well worth culture.

Melon Dells's Hybrid (Dell).—A green-fleshed variety with yellow, netted skin and of fine flavour.

Melon Netted Victory (Gilbert).—A coarsely-netted, green-fleshed kind, remarkably juicy and of excellent flavour.

Miscellaneous Plants.—Messrs. Veitch & Sons sent a pretty Oncidium, named O. prætextum, and several hybrid Lilies, which attracted much notice. Messrs. Chantrier Bros., Montefontaine, Oise, France, contributed a fine specimen of Croton Baronne James de Rothschild. It is a stately-growing plant, with leaves as large as those of Magnolia grandiflora, and of a beautiful dark bronzy-green colour, marked with bright crimson and orange veins. Mr. J. R. Pearson, Chilwell, showed Pelargoniums raised from seed of P. echinatum; they were named Beauty, Ariel, hybridum, and Prixie, all of good habit and bearing large trusses of varied shades of rose-coloured blossoms. Mr. C. Pache, Birmingham, sent a double scarlet-flowered, golden-leaved Pelargonium named Golden Jewel. A large collection of Liliums and Freezias came from the Colchester Bulb Company, including L. Browni, L. Hansoni, L. parvum, and other interesting kinds; also Triteleia laxa grandiflora, a beautiful blue-flowered kind from California, and several finely-coloured Calochorti. Messrs. Carter & Co. furnished a basket of flowering plants of their Eschscholtzia Mandarin, figured in The Garden (see Vol. XII., p. 568); also examples of a beautifully striped Phlox, named P. Drummondi viridis laciniata stellata. Messrs. Laing & Co., Forest Hill, sent the speckled Gloxinia Papillon, which was much admired. Mr. Barron showed, on behalf of Mons. V. Lemoine, Rue de l'Etang, Nancy, France, new Ivy-leaved Pelargoniums of a meritorious description; the best were Elfrida and Lucie Lemoine, already described, the double pink-flowered König Albert, and Madame Emilie Gallé, white with purple-striped centre. From the Society's gardens, at Chiswick, came finely-flowered, bushy plants of the beautiful blue Torenia Fournieri growing in pots, showing it to be one of the most useful and effective of decorative plants when well grown. Mr. G. Smith, Tollington Road Nursery, showed a collection of striped Petunias, which were highly commended on account of the fine dwarf habit of the plants, and the large size and varied colours of the blossoms.

Cut Flowers.—Stands of new Roses were shown by several of the leading growers. Mr. Turner, Slough, had grand examples of Harrison Weir, a blood-red Rose, double, and of fine substance; also Congress, Dean of Windsor, Dr. Sewell, and Penelope Mayo, to which latter two we have already alluded. Mr. Wm. Paul had a collection of English-raised Hybrid Perpetual Roses, among which were some promising kinds. Those which had been named were R. Dudley Baxter, rosy-crimson; Masterpiece, bright scarlet, very double; and Duchess of Bedford. The same exhibitor also showed a box of the beautiful pink May Quennell, one of the best new Hybrid Perpetual Roses in cultivation. Messrs. Paul & Son, Cheshunt, also sent several promising new Roses, among which may be mentioned Countess of Darnley, a remarkably double flower when fully expanded and of a rich rose colour; Duke of Teck, very bright crimson; and Charles Darwin. Mr. Caudwell, Wantage, contributed a box of good Rose blooms. Mr. G. F. Wilson sent blooms of Lilium californicum, pardalinum, Robinsoni, and Krameri, from large and small bulbs to show the different shades of colour. Mr. Noble, Sunningdale, sent blooms of Rose Queen of Bedders; also a new seedling Rose. Mr. R. Dean, Ealing, showed a collection of flowers of his improved strain of Sweet Williams, most of which were light coloured, but fine in shape and smooth and sound in the petals. Several of the kinds were striped and pretty, and some had Auricula-like flowers of a beautiful mauve colour with white edges. Mr. Caudwell, Wantage, also sent an extensive collection of Sweet Williams, among which were some remarkably fine flowers, both light and dark. The same exhibitor also sent blooms of Antirrhinums, which were noteworthy on account of their large spikes and well diversified colours. Mr. Cannell, Swanley, had a large collection of cut blooms of Verbenas, which embraced every shade of colour, from brilliant scarlet, blue, and purple, to the most delicate white, pink, and mauve. A large and interesting collection of cut blooms of Dianthus Heddewigi came from the Society's gardens; the flowers were large and fine, and remarkably bright and varied in colour. Mr. Dean sent several promising seedling Carnations and Picotees, and Mr. Noble had cut spikes of Spiræa palmata of a highly meritorious description. Mr. Parker showed a double-flowered Martagon Lily, also Œnothera Youngi, one of the best of the Evening Primroses for border decoration.

A cultural commendation was awarded to Mr. Heims for a well-grown plant of Cattleya gigas, which bore a dozen very large, gorgeously-coloured blossoms.

Fruits and Vegetables.—Mr. Monro, Potter's Bar, sent a dozen Melons named Monro's Bismarck, a green-fleshed, deeply-ribbed kind; also a scarlet-fleshed Melon called Lord Salisbury. Mr. H. Mann, gardener to Mrs. Hornsby, St. Vincents, Grantham, also showed seedling Melons. Mr. Gilbert, Burghley, exhibited several large Peas; and Mr. Turner, Slough, sent a beautiful Kidney Potato named Early Bird, a kind which was highly spoken of at the Potato exhibition in 1877. Mr. H. J. Hardy, Stour Valley Seed Grounds, showed plants of a new Pea called Sequel. It is said to be a heavy cropper, and each pod contains not less than ten medium-sized, round Peas. Mr. Cowburn, Sunbury Park, sent a Cos Lettuce named Sunbury Park, which appears to be a good kind.

SCOTTISH PANSY SOCIETY.

Undoubtedly the best and largest display ever made by this Society during its existence of thirty-four summers was on 21st ult., on the occasion of the annual show held at Edinburgh. Not only were the entries larger by half than is usual, but exhibitors were represented from a very wide radius, showing that the Society is attracting to itself an interest over the length and breadth of Scotland; while the quality of the exhibits must be pronounced exceptionally good, evincing a growing attention to the culture of this pretty border flower. In the nurserymen's class for twenty-four blooms of Show Pansies, Mr. Paul, Paisley, for the third consecutive year was awarded first prize and the Society's silver medal, with fine specimens of J. P. Barbour, Michael Saunders, Alex. Watt, Mauve Queen, John Rowatt, Robert Black, dark selfs; Jeannie Grieve, Mary Paul, Mrs. Eyles, Mrs. Arthur, Mrs. Henderson, Minnie, Mrs. Owen, the Duchess, Annie Wood Paul, white grounds; Clonard, Dr. Livingstone, James Orr, Miss Hope, Miss Rogers, R. Pollock, George Steedman, yellow grounds; May Queen, white self; and Mrs. Horsburgh, yellow self. Messrs. Dicksons & Co., Edinburgh, 2nd; Messrs. J. Cocker & Sons, Aberdeen, 3rd. For twenty-four fancy Pansies, Messrs. Downie & Laird, Edinburgh, received 1st and silver medal. The following are the varieties, and they were unquestionably the finest blooms for size and quality in the exhibition, viz., F. W. Leland, Mrs. S. Plummer, Mrs. J. Watt, James Grieve, Mrs. L. T. Fleming, Angus McLeod (seedling), W. Postlewhaite, Miss M. Methven (seedling), Mrs. E. H. Wood, Mrs. Jamieson, Honourable Mrs. Beatson, Isa McMeeking, Lady Falmouth, George Wood, Miss Talbet (seedling), Miss McNut, Mrs. Longfield (seedling), Lady Clerk (seedling), and six seedlings unnamed. Messrs. Dicksons & Co., 2nd; Cocker & Sons, 3rd. In the open class, Mr. Paul, Paisley, carried off 1st for eighteen show Pansies, with Luna, Darkness, Mauve Queen, Captain Knowles, dark selfs; Janet Lees, Miss E. Cochran, Delicata, Minnie, Mary Robertson, Mrs. Henderson, Jeannie Grieve, white grounds; Defoe, James Orr, Oracle, Mrs. Russell, Clonard, yellow grounds; May Queen, white self; and Citron, yellow self. Twelve seedling fancy Pansies: 1st, Downie & Laird; 2nd, Dicksons & Co. Six seedling show Pansies and six seedling fancy Pansies were shown in excellent condition by W. Paul, who was 1st. Twenty-four bedding Violas: 1st, Downie & Laird; 2nd, Dicksons & Co.; 3rd, W. Paul. Messrs. Downie & Laird's stand contained flowers possessing qualities in colour and substance to an eminent degree, and we are sorry we could not get a list of the varieties, as they were far ahead of what one generally sees in the Viola as exhibited at previous shows. Twenty-four bedding Pansies: 1st, Dicksons & Co.; 2nd, William Paul. Twenty-four self Pansies, viz., four blue, six white, six yellow, and eight dark: 1st, Mr. W. Paul, with Sunnypark Rival, Royal Blue, Chieftain, Crossflat Rival, blues; May Queen, Purity, Bessie Peacock, Snowdrop, Mrs. Todd, Miss Ramsay, whites; Mrs. Horsburgh, Dr. Masters, Citron, Cloth of Gold, Nugget, Zama, Yellow Boy, yellows; J. P. Barbour, M. Saunders, Darkness, John Rowatt, Mauve Queen, Luna, Rev. J. Morrison, Alex. Watt, Jas. Dalziel, dark; 2nd, Mr. L. T. Fleming, Berwick. It is unnecessary to give the other prizes in detail. In the gardeners' class Mr. Borrowman, Beeslack, Edinburgh, carried all before him with very fine flowers of the leading varieties in cultivation, and also secured some prizes in the open class; while Mr. Fleming, Berwick, was the most successful competitor in the amateurs' class, and gained the silver medal for most prizes. The amateurs' class was also well represented by Mr. Ross, Laurence Kirk; J. S. Ritchie, Denny; and W. Barr, Paisley. For the prizes for the best flowers in the various classes, to be selected from any stands in the exhibition, the following flowers were chosen: Best white ground, Jeannie Fleming (seedling); best yellow ground, Charles Turner (seedling); best dark self, Crosshill Gem; best white self, Jenny Anderson; best yellow self, Mrs. Horsburgh; best blue self, Sunnypark Rival; best flower in the exhibition, Jeannie Fleming. A prize was also offered for the best crimson self, and Pilrig Beauty, a variety sent out this year as a show Pansy, and described as a "crimson-lake self, a fine round flower of great substance," was the candidate, but the judges unanimously refused it. First-class certificates were awarded to Mr. Borrowman for fancy Pansy J. H. Borrowman; to Dicksons & Co. for fancy Pansy Memento; to Mr. Ross, Laurence Kirk, for fancy Pansy Jas. Douglas; and to Mr. Robertson Munro, Edinburgh, for bedding Viola Pink Perfection. J. G. P.

Scottish Horticultural Association (July 2).—Mr. A. D. Mackenzie read on this occasion a paper on "Heating." He described two methods of heating by water—the one by means of high pressure with small malleable iron pipes, and the other by low pressure with cast iron pipes and boilers. He then gave his experience of the various boilers which were used, giving preference to the saddle boiler. All who took part in the discussion agreed that the saddle boiler was the best. Mr. James Grieve read a paper on "Campanulas" in which he enumerated the different kinds, the places from which they had been first brought to this country, and then gave a general idea of the mode of cultivation. Rare specimens of the Iris, Tropæolum polyphyllum, and Alstrœmeria chilensis were exhibited by Mr. Dow; twenty-four new seedling fancy Pansies came from Messrs. Downie & Laird, beautiful flowers of Hoya carnosa from Mr. R. Robertson, and large spikes of Stocks from Mr. Wm. Black.

Rainfall at Kylemore Castle, Co. Galway :—

June		June		June	
1	—	11	·65	21	·08
2	—	12	—	22	·40
3	·66	13	—	23	·43
4	·23	14	·03	24	1·07
5	·46	15	·33	25	·42
6	1·94	16	—	26	·43
7	·66	17	·33	27	·77
8	·01	18	·19	28	·04
9	·35	19	·63	29	—
10	·22	20	·64	30	·35
					11·32

This amount of rainfall is unprecedented, even in this wet locality, and is, perhaps, the largest on record. It will be observed that there were only six dry days during the whole of the month; the sky was dull and leaden, and the wind north and cold.—James Garnier.

OBITUARY.

Colonel the Right Hon. W. F. Tighe died at Woodstock Park, Ireland, on June 11, in the eighty-fifth year of his age. To gardening and arboriculture the death of Colonel Tighe is a great loss; for more than sixty years he devoted a large portion of his time to his gardens and extensive woods, and for fifty-three years of that time he was zealously assisted by Lady Louisa Tighe in every work that has made Woodstock so beautiful and interesting. Colonel Tighe's first work was to plant Mont Alto, now so picturesque, but then a naked barren scar; and so well has ornamental planting been kept up, that Woodstock Park may now be said to be a vast arboretum. Rare trees and shrubs now extend continuously from the house to what is termed the upper glen, some two miles distant, and the last work of Colonel Tighe was to plant an avenue of Picea nobilis on the upper drive to the glen. Colonel Tighe looked upon every new hardy tree as a treasure. Of the Araucaria imbricata he formed a high opinion, and when it was most expensive he planted some 200 trees of it; only one, however, of these has grown up to be a fine tree, and that owing to its having been planted on a suitable subsoil. The public can still see and appreciate the rare beauties of Woodstock Park, but only those who had the pleasure of living near or serving Colonel Tighe can fully estimate the loss which his death has occasioned. He trusted his servants with a dignified confidence, and when any plan of operations was once settled on, he never interfered with the details of the work. To the gardening public it will be interesting to know that Woodstock Park will continue the residence of Lady Louisa Tighe.—Charles McDonald, *Stokesley, Yorks.* [All who know Irish gardens, and all who have seen the beautiful trees at Woodstock, will share the regrets of our correspondent and sympathise with Lady Tighe in her loss.]

We have also to record the death, on the 29th ult., of Mr. William Holmes, Florist, Hackney, at the comparatively early age of fifty-seven. Mr. Holmes was well known and much respected, and by his death horticulture, especially that branch of it in which he was more particularly engaged, has lost an energetic supporter.

No. 347.] SATURDAY, JULY 13, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

BRITISH ORCHIDS FOR THE GARDEN.

IN last week's GARDEN I observe (see p. 7) a short article from Mr. C. W. Dod in which he calls attention to Orchis latifolia as being worthy of more frequent cultivation than it has hitherto been subjected to in British gardens; and he further asks whether "Orchis latifolia is specifically distinct from O. maculata." In my opinion, Mr. Dod's observations deserve attention, especially his assertion that Orchis latifolia ought to be made more of a garden plant than it is at present. I would supplement his recommendation by stating that, in my opinion, all our British Orchids might be more extensively cultivated than they are, and that with much advantage and effect in modern flower gardening. It is only where they are seen in masses that their beauty and effectiveness can be realised. As a general rule, they grow singly, scattered through our meadows, which is probably one of the causes why they are so little noticed. I had an instance lately of the grand effect produced by Orchis latifolia as it grew in quantity together while on a botanical excursion to the extreme south-west of Ireland. On passing over a strip of country lying between Dingle and Ventry, Co. Kerry, I came on the corner of a moist field which was quite purple with the flowers of O. latifolia. The plants covered a surface of some three-fourths of an acre, and were nearly as close together as they could grow. The moist, warm atmosphere of that portion of Ireland which lies along the sides of Dingle Bay seemed very favourable to this Orchid, each plant averaging 1 ft. or more in height. I may here add another instance of the fine effect produced by a different species when growing together in large quantities, viz., Orchis pyramidalis. This grows naturally in the Glasnevin Gardens and in all the neighbouring meadows. I had last week occasion to look over a field which has lately been purchased by Government for the extension of the Glasnevin Arboretum, and in doing so I observed a dry bank on a portion of the field where many hundreds of this Orchis were in bloom and nearly close together. No one who is only accustomed to see the plant growing singly could form an adequate idea of its beauty in this instance where so many were under the eye at a glance. I had a quantity of it dug up and removed to the Orchid department in the garden; and even ordinary visitors were so attracted by the effect which it produced, that they left the gravel walks and went to examine what the brilliant flowers were which seemed new to them. The query having reference to the specific distinctness of Orchis latifolia and O. maculata seems to me not so easy to answer satisfactorily as would at first sight appear. I believe there are not many British botanists who would not say, offhand, that they are truly distinct species, which is also my own opinion in so far as the generally received idea of a species is concerned. It must, however, be conceded by those who have seen these plants growing extensively under very varied circumstances that forms do occur, especially on the side of O. latifolia, which are very intermediate. The longer spur, more deeply three-lobed lip, with the three sepals of the flowers spreading, and the solid stem are pretty constant marks for distinguishing O. maculata from O. latifolia, though I have seen forms where all these marks did not hold good. None of our British Orchids sport so much into varieties as O. latifolia, some of which are very superior to the ordinary form, but I have never seen any with flowers nearly equal in size to those mentioned by Mr. Dod, who says he has met "with flower-heads fully 1 ft. long, and closely set with blossoms." An inflorescence covering a rachis of from 2 in. to 4 in. long is what I have seen in the case of this plant. D. MOORE.

Glasnevin.

TABLE PLANTS.

IN the remarks which I forwarded to you upon this subject (see p. 1) I purposely confined myself to the consideration of plants which one can see over, and of plants which one can see under, when placed upon tables of the usual height, which is generally 2 ft. 5 in. from the ground. But there is a third group of table plants to which I did not then allude, because their height is of very little consequence. To this group belong all those plants which one can see through. Under this heading may be mentioned a few Palms of the character of Cocos Weddelliana and Geonoma gracilis, a few flowering plants, such as Thyrsacanthus rutilans and Russellia juncea, and a host of elegant Grasses. I do not mean to assert that any and every specimen of the plants which I have enumerated is a good table plant, but rather to say that from amongst plants of this general habit, when well cultivated and when not possessing too dense a growth, may be picked some of the most elegant and useful decorations for the table. When, therefore, prizes are offered for table plants, the schedule ought to state whether they are for plants which one can see through, see over, or see under. In all cases the size of the pot in which the plant is grown ought to be limited. In the case of plants which one can see through, nothing need be said about height. In the case of plants which one can see over, the height should be restricted to 15 in. or to 27 in. from the bottom of the pot. While in the case of plants that one can see under, it is not necessary to limit the height, but the schedule must explain that there is to be a clear stem up to 20 in., or up to 32 in., from the bottom of the pot. W. T. T.

TABLE DECORATIONS.

WE have heard much on this subject from time to time: what sort of plants to use—their height, colour, and habit; the way to make the dining-room table so as to accommodate as many plants and flowers as possible without inconveniencing the diners, &c. Now, the notion I have to support is that dining-room-table decoration is an incongruity, is indefensible, unnecessary, and a depravation of luxury. I base my argument on the same grounds as the landscape gardener did who said that flower-beds in the middle of a Potato quarter or a bed of Horseradish would be an outrage, not only on good taste, but on common sense. I maintain that no plea whatever can be set up for the use of flowers or plants on a dining-room table —they are an utter incongruity. Roses, Ferns, and other flowers or graceful plants do not and never can associate with roast beef or turtle soup. I knew a lady once who complained to her gardener about introducing scented Thyme into her flower vases. She said "that was for the kitchen—not for her vases," and so far she was right; and we venture to assert that flowers and plants are for the drawing-room, the library, and the boudoir, and not for the dining-room. There the cook, the confectioner, and the fruiterer should reign supreme, and they possess the art and everything else to render a dining-table as attractive as it can be made. What man or woman with a healthy appetite cares one farthing for the flowers on the table? it is only when they have done dining that, as a matter of fact, they deign to glance at them, and by that time they should retire to the drawing-room or the conservatory, where they may legitimately turn their attention to Flora's treasures. We have had not a little to do with this table decoration business, and we more than fancy that there are not a few ladies and gentlemen who share our opinions—who regard a dining-room table strewed with flowers till it resembles a flower bed as one of the most objectionable arrangements ever introduced. We have known more than one sturdy old English gentleman quietly protest against the table being encumbered with flowers and flower vases by first pushing them as far out of his way as possible preliminary to making a meal. One old veteran, pretty well known "in the service," and who is a perfectly cultivated and courteous gentleman withal, regularly "clears the deck" in this fashion before making the attack, and no one calls in question his "ways." The real truth of the matter is, table decoration is a fashion which is now extending downwards, even to high life "below stairs," "school teas," and such like festivals, and we shall probably soon see it going out of fashion in the upper grades of society in consequence—and the sooner the better. J. S. W.

LILIUM HANSONI.

Permit me to reply to Mr. Wilson's remarks (see p. 8) in regard to this Lily, that nothing could be further from my intention in my previous remarks than to insinuate that the plant which he exhibited was obtained either directly or indirectly from me or my firm. I simply stated that the Lily was in my possession unnamed in 1869-70. We identify it, now we have seen the flower, to be the early yellow-flowering Martagon then obtained for us from Japan, and grown on for years without a flower being obtained. It was named Hansoni at quite a recent date. I have now before me a catalogue of a sale at Messrs. Stevens of "New and Rare Japanese Lilies, collected by Mr. Kramer in Japan," dated December 28, 1871. This sale was a remarkable one, for seed of Primula japonica fetched the astonishingly high figure of £84 for a quantity under 3 oz., and likewise for its being the first occasion on which Lilium Krameri was introduced by me and subsequently named in honour of its collector—Mr. Kramer. Lots 163, 164, and 165 are headed Lilium colchicum—see drawing. The drawing was a Japanese one of L. Hansoni, and the three bulbs offered were some of a batch sent over to me, of which the others grew and were Martagons, but did not bloom. These three lots were bought by Mr. Bull, Mr. Barr, and Mr. Wilson, as I have stated. What became of the bulbs I do not know; but I know that L. Hansoni was that year in my possession and sold by me, and entered in my catalogue without name. Of L. Szovitzianum Mr. Wilson writes: "To see this Lily in perfection a visit should be paid to Edinburgh to Mr. M'Nab." I hope that Mr. Wilson will allow that perfection may be obtained nearer London. We have had here 1500 spikes of bloom from 4 ft. to 6 ft. high, with from four to twenty bells of flower on each spike, some of them 6 in. across, most beautifully coloured, and likewise no two alike. Add 2000 more smaller plants, with smaller blooms, and you have our bed. It was a grand sight. Without wishing to detract from any credit due to Mr. M'Nab, we also claim that the word perfection should be applied to our bed. A. Wallace.

Colchester.

Roses at Boxhill.—A fine display of Roses may now be seen in Mr. Appleby's nursery at Boxhill. It consists of some 3000 plants arranged as an avenue on each side of a long walk. Planting in straight lines is, as a rule, objectionable, but when the colours are judiciously blended, as they were in this case, and backed on each side with Conifers and other trees and shrubs, the effect is all that could be desired. The soil here is a deep yellow loam, with a subsoil of fullers'-earth, and in this Roses appear to succeed remarkably well, plants which have only been budded two years having made fine bushy heads loaded with large blossoms. Among kinds unusually well flowered we noted Paul Neron, bearing large and well-formed blossoms, the delicately-tinted Baroness de Rothschild, and the pure white Boule de Neige. Half-standards of Princess Louise Victoria, with compact bushy heads, bore more than twenty fully expanded, delicate, blush-coloured blossoms, and Maréchal Niel, grown as a standard, does better here than we have seen it anywhere else, its blooms being fine in colour and produced in profusion. The cream-coloured Belle Lyonnaise, considered to be a great improvement on Gloire de Dijon, bears large flowers of great substance, and Mdlle. de Tartars, a Tea-scented Rose of a pinkish-rose tint not often seen, and fine in the bud state for bouquets, does unusually well here; as does also Cheshunt Hybrid.—S.

Town Roses.—It is right that I should speak a good word for the success that has attended the growth of Roses since I left Kensington, about ten years ago. One reason that I had for leaving town for the country was, that I could not grow Roses and Conifers. The fuliginous "smuts" of the atmosphere not only checking their growth, but destroying them altogether. A few days ago I was at a garden party on Campden Hill, and was surprised and delighted to see the choicest varieties of Roses grown with the utmost beauty and luxuriance. Not so the Conifers, the sulphur in the air being fatal to them.—E. W. C., *Glen Andred.*

Old Roses.—The names of the old Roses shown at the Crystal Palace last week were, so far as known, as follows: Old China, Scotch White, Felicité Perpetueé, Aimée Vibert, Old Monthly, White Bath, Bourbon Queen, Old Cabbage, Common Moss, Madame Legras, Chenédolé, Fairy, Eliza Savage, Yellow Provence, Crimson Damask, Old Damask, Pactolus, Ruga, Globe Hip, Rosa Manetti, Comtesse de Lacepède, Rosa Mundi, York and Lancaster, Village Maid, Rose de Meaux, Coupe de Hebe, Adam, Crested Moss, York White, and Comte de Paris.

NOTES FROM KEW.

Hardy Shrubs.—Undoubtedly one of the most handsome of hardy climbers is the Chilian Berberidopsis corallina; the clusters of drooping, coral-like blossoms are, as well as the flower-stalks themselves, a beautiful deep red. For the rafter of the cool conservatory few plants surpass this in loveliness. Myrtus americana makes a pretty wall plant; the leaves are smaller than those of the common Myrtle, and the almost white, waxy flowers are borne on longer stalks. Veronica kermesina is a very desirable kind for a dwarf wall, the long spikes of mauve-coloured flowers being both graceful and pretty. Clematis acuminata, a Himalayan species and a very free bloomer, has flowers of a blue-purple colour; altogether, this is a charming plant, and one worth a place in any garden.

Hardy Herbaceous Plants.—The large and beautiful genus Veronica contains few species which are more distinct and at the same time combine so much elegance and beauty as V. virginica var. japonica. This new claimant for garden favour has the leaves in whorls just like the common Martagon Lily; the stem attains a height of about 18 in., and is surmounted by a long spike of blue flowers with yellow stamens. Another new plant, perhaps less beautiful but not less interesting, is Villarsia capitata, a miniature aquatic from Australia; in colour the small flowers are similar to those of V. nymphæoides, a rather rare British plant found in still waters in some of the southern counties. In Australia it grows in wet sand, and, under cultivation, it makes a small cushion of bright green leaves, thickly studded with its pretty yellow flowers. A South European form of Orchis pyramidalis merits special mention; it is extremely handsome, and so far superior in size and beauty to our British plant that most people would never suspect the two to be botanically identical; the Kew plants were imported from Portugal. Abronia arenaria, a Californian perrenial, is a pretty trailer with clusters of bright yellow flowers. Hypericum orientale grows about 15 in. high, and produces a profusion of pale yellow blossoms. For growing in small chinks in rockwork the little Mazus Pumilio is very suitable; its purple flowers are borne on short stalks which just overtop the foliage; this, perhaps the most interesting of the genus, is a native of Van Diemen's Land. Thladiantha dubia, a Chinese member of the Gourd family, has heart-shaped leaves and showy, bell-shaped, yellow flowers; this hardy perennial would furnish a beautiful partial summer covering for small arbours, &c., and for such purposes can be strongly recommended. Neja gracilis, a neat bushy Composite from Mexico, has needle-shaped leaves and heads of bright yellow blossoms; it grows about 1 ft. high, and is a most charming plant for dry sunny spots of the rockery or open border. Two Grindelias, G. robusta and G. angustifolia, are very fine just now; both have large heads of golden-yellow flowers and grow about the same height (2 ft.); the latter, as its name would imply, has narrower leaves than G. robusta. Erigeron speciosum, a Californian perennial, has broad leaves and mauve-coloured blossoms, whilst E. multiradiatum has narrower leaves and flowers a shade deeper in colour than those of E. speciosum; both grow from 2 ft. to 3 ft. high. As a single specimen or for making a bold and effective mass, Telekia cordifolia comes in well; it has large, heart-shaped leaves and golden-yellow heads about 4 in. across; the flower-stems grow as high as 4 ft. Campanula lactea is a beautiful, tall-growing Bell-flower with innumerable, upright, pale porcelain-blue blossoms; C. Van Houttei is a much dwarfer grower, with long, drooping, purple flowers. The North American Lysimachia ciliata is a tall perennial with flowers of a pale yellow colour.

Greenhouse Plants.—Mesembryanthemum violaceum and M. coccineum are handsome plants, very easily grown, and most useful for cool house decoration; both are of similar shrubby habit. M. violaceum has purple flowers, whilst the colour of those of M. coccineum is reddish. Crassula pallida has precisely the habit of the old Rochea falcata, or, as it is now called, Crassula falcata, but the flowers are whitish instead of bright red. Bomarea Carderi, when planted out as at Kew, makes a most attractive and uncommon-looking object; the drooping flowers are pink, spotted with purple.

Orchids.—Odontoglossum Lindleyanum, from New Granada, is a compact plant with narrow leaves; the sepals and petals are pale yellow and brown, the column and the horns at the base of the lip white. This is not a mere botanical plant, but is worth growing from a garden point of view. Palumbina candida, a native of Guatemala, has small narrow pseudobulbs each bearing a single leaf; the flowers are white, tinged with rose. Dendrobium dixanthum is a pleasing species with good-sized yellow flowers, and D. secundum, a smaller-growing one, with spikes of smaller blossoms, is a rosy-purple, with the exception of the little lip which is deep orange-red. A Mexican Epidendrum, E. radiatum, is a free-flowering fragrant species with the general habit of E. cochleatum; the sepals and petals are greenish-white, and the large, shell-shaped lip is marked with radiating purple lines.—†

BROUSSA AND MOUNT OLYMPUS.

From Syra I went on to Constantinople by Austrian Lloyd's steamer, passing between the islands of Andros and Tenos, and by Mytilene, Tenedos, and the Plains of Troy, and finding a steamer in the Golden Horn just starting for the port of Broussa, I got on board without landing, re-crossed the Sea of Marmora to Modania, and drove to Broussa, 20 miles through a lovely country, reaching my destination the same afternoon. The culture of silk is the prevailing industry of this part of Asia Minor, and the road out of Modania passes for several miles through a succession of Mulberry plantations bright and green in their spring leafage. Long strings of camels passing to and from the interior give a novelty to the scene. The roadsides are rich with several species of Salvias and boraginaceous plants, including a white Symphytum and Onosma taurica. The sprigs of the latter are gathered for the silkworms to spin in. The aspect of the country is most fruitful; Quinces, Plums, Peaches, White Mulberry, and the Olive luxuriate. Rice is cultivated here and there on the low-lying ground, and we pass fine groves of a handsome deciduous Oak, but the general cultivation is poor in the extreme, not a fourth of the surface being under tillage, and there is a pervading aspect of thriftlessness too general throughout Turkey. A railway was constructed a few years ago from the port of Modania to Broussa, with the intention of ultimately connecting it with a general system throughout Asia Minor, including the line from Scutari to Ismidt, but the earthwork was so wretchedly planned and executed, that the line would have to be completely remodelled before a train could pass over it; when the rolling stock arrived it would not fit the rails, and the railway pier at Modania is already toppling over. The aspect of the Bithynian Olympus as it is approached from the coast is truly grand. A finely moulded ridge of 5000 ft., capped with a peaky snow-covered summit, rising another 2000 ft. out of the dark pine-fringed edge of the main plateau. As Broussa is approached the ditches are all steaming from the hot springs which burst up from the north-west flank of the mountain, and supply the baths—some of which are very ancient—with water at a temperature of 140°.

Broussa is, without exception, the most beautiful place I have ever seen, with a situation reminding one of Great Malvern. It covers an immense area on a sloping plateau, at from 550 ft. to 700 ft. above the sea level, at the foot of Olympus. It contains fifty-two mosques, with their bubble-like domes and white minarets, and other fine buildings, interspersed with Mulberry orchards and luxuriant gardens. The mountain, with its well-marked zones of vegetation, which, however, interlace and overlap, consisting of—first, Chestnut; second, deciduous Oaks and Hazel; third, Beech; fourth, Pines of two species; fifth, Junipers; sixth, snowy summit, rising up from the city, which is partly built up its lower slope. Broussa contains several excellent hotels; horses and attendants are remarkably cheap and good, only two francs a day. I went twice up Olympus, but not to the final summit, which was covered with snow. My Turkish attendants, though they could not converse with me in any language common to us, were really capital fellows, though savage to behold, with their picturesque costume, and belts full of rude arms. They fell into botanical pursuit with good fellowship and will, and did as much work as any professed botanical guide in the Alps, often finding and pointing out species that would otherwise have escaped my notice.

Contrasted with the Greek Archipelago, evergreen Oaks were almost entirely absent, and replaced by several deciduous species; indeed, there are few evergreen shrubs on Olympus. The commn Laurel and Daphne pontica, the Eastern form of Daphne Laureola, were the main exceptions. Bulbous plants were remarkably abundant. Fritillaria pontica in profusion almost everywhere, with a range of altitude of nearly 4000 ft. I obtained also seven or eight species of Ornithogalum, a Galanthus out of flower, and six or seven species of Crocus. I was just in time to see Crocus aerius in full beauty, at a height of from 4000 ft. to 5000 ft., the flowers at its highest limit appearing amongst the melting snow, and lower down under the Pine trees, intermixed with Crocus gargaricus, a charming little yellow species. At a height of from 3500 ft. to 4000 ft. the floral display was like a garden. The purple Aubrietia deltoidea, with a yellow Alyssum on the rocks, and the yellow and blue Crocuses, intermixed with Hypericum calycinum, a handsome Doronicum, and large tufts of a handsome purple Primula, varying with white flowers, identical with a plant in cultivation under the name of Primula altaica, but closely allied to our common Primrose. Two or three species of Gagea, and the lovely glaucous low-growing Hypericum olympicum, were also conspicuous, intermixed with a blue Muscari. The summit of the plateau, at a height of about 5500 ft., the limit of the Pines, was comparatively barren, and afforded nothing but tufts of a Juniperus, a sort of "Savin," a small Potentilla, Crocus aerius and a little Gagea among the snow patches; but it was evidently too early on April the 16th for the higher region of Olympus, which in June would probably afford a further set of species. Vaccinium Arctostaphylos is an abundant shrub on the flanks of Olympus; the leaves are collected and used in lieu of tea. They are gathered in spring, and after being laid in the shade on a straw mat, are rolled in the hands and dried by a slow fire in an oven. It is only within the last few years that the Vaccinium leaves have been thus employed, but they have now become a regular article of commerce, sold under the name of "Broussa Tea" at from 30 to 60 piastres the oke of 2¾ lb., and I am assured make a very palatable beverage. To give anything like a complete list of the plants of Olympus would be beyond the scope of this paper; the number of species named after the mountain expresses the extreme richness of the flora. In addition to those already named I found a Dentaria closely allied to bulbifera, Viola olympica, a handsome species coming between the Alpine calcarata and tricolor. Cistus laurifolius and C. salviæfolius, Anemone blanda, the eastern representative of A. apennina, Ruscus aculeatus, and R. Hypophyllum, a Sedum allied to Telephium, a Gentiana allied to Asclepiadea, Saxifraga rotundifolia, a handsome Lamium allied to L. longiflorum, a number of conspicuous species of Lathyrus and Orobus, including one with yellow flowers. Boraginaceous plants are extremely abundant, including several Symphytums, a Borago, and Lithospermum purpureocœruleum; also a Digitalis not yet in flower, Campanula persicifolia, an Alpine Myosotis, a Corydalis, a Geranium, a Convallaria, and Asphodelus luteus.

Amongst the shrubs were Ligustrum vulgare, Cercis Siliquastrum, gorgeous with its rich rosy-crimson flowers, intermixed with a handsome white-flowered Fraxinus, which was very conspicuous above Broussa; also Juniperus oxycedrus, Jasminum fruticans, and Viscum album on the Chestnut.

Ferns were tolerably abundant, but I observed none but the following British species: Scolopendrium vulgare, Asplenium Adiantum-nigrum, A. acutum, A. Trichomanes, Cystopteris fragilis, Polystichum angulare, Pteris aquilina, and Athyrium Filix-fœmina. The fauna of Olympus is also rich. Roe-deer and wild boar are very abundant; red-deer are also found, together with foxes, jackals, and wolves. Eagles, of more than one species, were constantly in sight. Vultures are occasionally met with, and the red-legged partridge, quail, and woodcock are abundant. The view from near the summit embraces one of the most superb panoramas I ever beheld. The ridge of Olympus is isolated, and commands a wide range of vision all over the Sea of Marmora to Constantinople, and far inland, to the mountains of Asia Minor, with the rich plain of Broussa and the lakes of Maniyas and Abullonia as a near foreground. On the day following, my second ascent of Olympus, I made an excursion across the plain of Broussa to the hills south of Gemlik, and found an annulate Crocus said to have yellow flowers in midwinter, probably chrysanthus; also a second species of Crocus, along with Lavandula Stæchas, Paliurus aculeatus, a cream-coloured Onosma, and Jasminum fruticans.—G. Maw, in "Transactions of the Botanical Society of Edinburgh."

Spiræa Ulmaria fl.-pl.—This dwarf-growing variety now forms a charming feature in some of the London nurseries. It is planted generally on the borders of shrubberies and in masses, and in either way, where the soil is good and sandy, the plants spread freely and throw up strong plumes of cream-coloured flowers in abundance.—S.

Zephyranthes carinata.—This lovely Mexican Zephyr flower is now flowering freely in the hardy bulb collection at Kew. It is a very fine variety with blossoms 3 in. across and of a deep rose colour. It appears to be thriving admirably on a sunny border in company with the well-known white-flowered Z. Atamasco. Many other fine bulbous plants are also in flower at present, including the twin-flowering Bravoa (B. gemminiflora), with its bright, scarlet, tubular flowers borne on stems 18 in. high, and Watsonia fulgens with blossoms of the same brilliant colour, but very much larger. The white variety of Gladiolus Colvillei also forms an interesting object. —A.

NOTES OF THE WEEK.

The Fruit Crops.—Our reports of these, furnished by many o the best growers throughout the country, are published in part this week, but many are left over owing to want of space. These reports will be found valuable, not only as such, but from the information that is given incidentally as to the kinds that do best in many different localities. Next week we hope to publish the Scotch, Irish, and supplemental English reports.

Periploca græca.—This curious and graceful creeping shrub, usually crucified on walls in the usual manner, forms a vigorous mass on an old tree in the Cambridge Botanic Garden, and now has many flowers. Celastrus scandens also grows vigorously as a shrub in the same garden.

Campanula nobilis.—Though cut spikes of this Campanula are largely used in Covent Garden, they do not last long in good condition, but on the plant they produce a fine effect for many weeks. We lately saw some fine plants of it in Messrs. Veitch's nursery, where they grew in front of some rockwork, and were one mass of blue blossoms. In shrubberies, sides of woodland walks, or in the wild garden this is a most effective plant.—S.

Striped-leaved Dracænas.—Few Dracænas, handsome though they be, are more ornamental than one named Hendersoni tricolor. It is a robust grower, its leaves arch gracefully, and they are beautifully striped with different shades of rosy-scarlet, orange, and green. We lately saw some good plants of it in Messrs. Lee's nursery at Hammersmith.

Lady's Bedstraws (Galiums).—These are full of flower just now, and well deserve to be brought more into general cultivation. The whites and pale yellows intermingled are beautiful in point of colour, and the odour, it need hardly be said, is delightful. They seem to delight in the sun, and all flower very freely. Of course they will do admirably for the wild garden among shrubs placed thinly, or on banks where many other things would not grow.

Triteleia laxa.—This is one of the best blue flowering hardy plants now in bloom. Grown in good deep sandy loam, the spikes of flower are large and strong, and the flowers of a deep blue colour. Cut blooms of it were shown well at South Kensington the other day from Colchester.

The Cotton Thistles (Onopordons).—These noble plants, usually left to the botanic gardener, are now in flower, and no hardy plants are more valuable for their stately port, while their flowers are very large and showy. One now in the Cambridge Botanic Garden (O. græcum) has very large showy flowers of a deep rosy-purple. They thrive as well in exposed places as in sheltered ones among shrubs, and they may be effectively used in a variety of ways. Temperance in their use is, however, desirable, as in some situations they are apt to seed so freely, that they require to be kept down judiciously.

Geranium sylvaticum fl.-pl.—This double-flowered form of a well-known hardy plant does not appear to be grown very extensively either in nurseries or gardens. It yields abundance of double mauve-coloured blossoms, which are almost equal in appearance to those of a double Primrose. It would be well worth growing if only to supply cut blooms.—S.

Plants in Flower at Colchester.—In our Orchid houses Dendrobium transparens and D. formosum giganteum have opened fine flowers; likewise a very pretty form of Oncidium intermediate between O. pubes and O. sarcodes, with barred yellow flowers, about 120 on a branched spike about 1½ ft. high, gracefully pendulous. Maxillaria grandiflora and Thunia alba are just opening, and the not too well-known Oncidium Harrisonianum is throwing up flower-spikes; likewise Catasetum tridentatum. Thelymitra canaliculata, from Australia, is just disclosing its spike of flowers, and, from the same country, Dictopogon humilis has opened its lilac-tinted flowers, perfumed like the Heliotrope, on a branched spike 1½ ft. high. In the open ground it is also showing flower; also Bulbine bulbosa (yellow); from the Cape, Hypoxis Rooperi has opened its spike of yellow star-shaped flowers; and the three Freesias, Leichtlini, refracta, and refracta alba, are still in bloom, and perfume the air around. Roscoea purpurea, from the Himalayas, has opened a quaint purple flower, and Cumminghia trimaculata is just out. Hyacinthus candicans promises to be very fine this year. Romneya Coulteri is now 6 ft. high, and 3 ft. through, and just showing flower-buds. Among the Calochorti, C. luteus venustus and macrocarpus are fully out. Of the Lilies, our bed of L. dalmaticum is fine in five varieties, differing from dark blood-red to a light puce, with about 500 stems of bloom L. Hansoni and coridion are just over. L. japonicum Colchesteri is now out, and a few late blooms of L. Browni, L. polyphyllum, L superbum, L. canadense, L. pardalinum, L. Humboldti and its ocellated variety are now in bloom. Amongst the Thunbergianums the new citrinum, Van Houttei, marmoratum, and T. fl.-pl. are out, while the forms of longiflorum, excelsum, Krameri, the showy philadelphicum, candidum flore-striata, and callosum are not behind; but the dry weather is very trying; the early blooms of auratum are opening. Triteleia laxa grandiflora forms a bright mass of Tyrian blue. Brodiæa congesta alba fl.-pl. is still out (it began six weeks ago), and B. grandiflora (in two forms, one very dwarf), is exceedingly floriferous. Iris iberica has surprised us by opening a fine very late bloom. The Gladioli have begun with Colvillei, Colvillei albus (most beautiful), ramosus, and Prince of Wales. Phædranassa chloracra, and Amaryllis aulica are also now opening.—A. WALLACE.

Lilium auratum virginalis.—We are indebted to Mr. F. Miles for the sight of some fine specimens of this nearly white variety of auratum, which is perhaps the most beautiful variety of that Lily.

Primula capitata.—An exceedingly fine variety of this beautiful Himalayan Primrose is now in flower on a rockery at Kew; indeed, it is the finest we have as yet seen. The heads of blossoms are nearly 2 in. across and of an intensely deep purple colour, which is shown up more fully by the white mealy substance which thickly covers the stem and head.—W.

Sweet Williams and Antirrhinums.—Examples of these have been sent to us by Mr. Caudwell, of Wantage. Amongst both were some handsome kinds, the result of many years' selection. The Antirrhinums comprised one or two good yellow ones, and amongst the Sweet Williams were some charming light-coloured ones, striped and spotted with different shades of crimson and lilac.

Cymbidium Parishi.—This beautiful Cymbidium is now in flower in the Victoria Nurseries, Holloway, being the first time in which it has flowered, we believe, in Europe. The blossoms, which are large, are agreeably scented and pure white, with the exception, of the labellum, which is marked with purple streaks and blotches and has, in addition, an orange-coloured base.

Orange Lilies in Hyde Park.—We have lately noticed a very brilliant effect afforded by a few groups of tall Orange Lilies in Hyde Park, near the Victoria Gate. The Lilies are in partial shade under trees. Such effects are worth taking the trouble to secure, and we trust they may be multiplied. But to secure them it will be necessary to give up the old system of rough digging the whole surface and mutilating root and branch every year. This system is only navvy's work. The true gardener should know every inch of his ground and all the life that it bears, whether of bulb, roots of herbaceous plants, or shrubs. What we must have in the future is a system of weeding and dressing, only digging with vigour when preparing well before planting.—R.

Lobelia littoralis.—There are but few prettier subjects for the rock garden than this New Zealand Lobelia. It creeps over the surface of the soil after the manner of the fruiting Duck-weed (Nertera depressa). The flowers, which are about 1 in. in height, are borne very profusely, and are of a pure white colour, and of a size larger than those of the kinds used for bedding purposes. In autumn they are replaced by numerous violet-coloured berries about the size of large Peas. Therefore the plant may be said to be beautiful from May till October. It is stated in the "Flora of New Zealand" to be found in damp, shady places, but I find that under those conditions in cultivation it does not flower. If placed on an exposed part of the rockery, with ample room for it to spread, an abundance of blossoms will be the result. It appears to be very little known in gardens at present, although it has been introduced some years.—A.

Ellacombe's Plant Lore and Garden Craft of Shakespeare.*—We have just received the first copy of this book, which will be welcome to many readers of THE GARDEN as being a reprint of the many interesting papers contributed to our columns by Mr. Ellacombe. In this work every passage is quoted in which Shakespeare names any tree, plant, flower, or vegetable production. A short account of each is given, identifying Shakespeare's plants with their modern representatives, with illustrations from contemporary writers, and with notices of any points of literary, botanical, and gardening interest connected with the plants named. Under the circumstances, our only duty is to announce the appearance of the book.

Mule Pink Delicatus.—This is an improvement on the ordinary kind as regards colour. It is, I believe, a cross between a laced Pink and a Sweet William.—W. PAUL, *Paisley*.

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* "The Plant Lore and Garden Craft of Shakespeare." By Rev. Henry N. Ellacombe, M.A., Vicar of Bitton, Gloucestershire. Printed for the Author by William Pollard, Exeter.

DYE PLANTS.

Although the ancients knew little or nothing of the principles of chemistry as a science, they, nevertheless, managed to practise it as an art with a certain amount of success, more especially in the way of extracting beautiful dye stuffs from various animal and vegetable substances. The Phœnicians, Indians, Persians, Chinese, and Egyptians were the first to discover that, by proper treatment, certain plants and animals were capable of yielding brilliant dyes, and they no doubt taught the art to the Greeks and Romans. Amongst the dye plants used in former days, the forms which are figured herewith may be taken as typical specimens, and there is but little doubt that Joseph's coat owed some at least of its rainbow tints to the juices of the Buckthorn, Polygonum, and the Indigo plant.

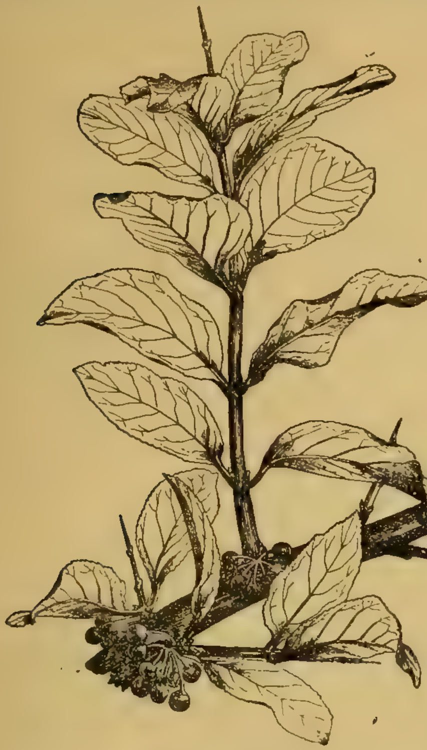

Fig. 1.—Rhamnus utilis.

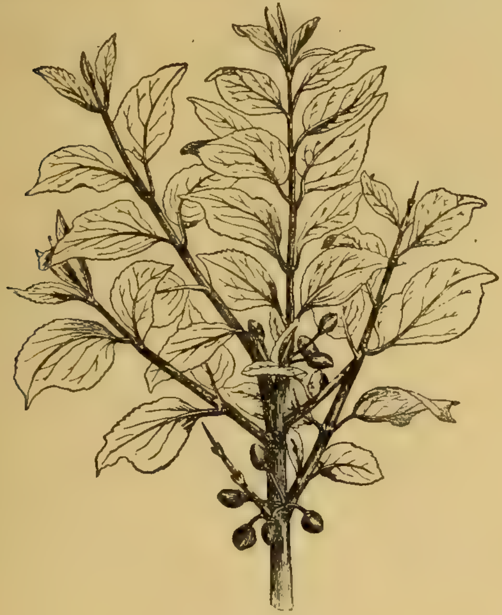

Fig. 2.—Rhamnus chlorophorum.

Rhamnus utilis and R. chlorophorum (figs. 1 & 2) are used to the present day by the Chinese and Japanese for the extraction of a peculiar dye called *Lokao* or *vert lumière*. Unlike any other vegetable green dye, it is just as brilliant by candle-light as by daylight. It was much used in France at one time, but the discovery of a still more brilliant dye obtained from coal tar, which was just as unchangeable at night, put it completely out of favour. The Rhamnus Frangula, from which Persian or Turkish yellow berries are obtained, is closely allied to those figured above.

The uses of the Indigofera tinctoria (fig. 3) and its congeners dates from the earliest ages. Like the Polygonum tinctorium (fig. 4), which is much used in China for dyeing fabrics blue, the juice of this plant is quite colourless, and it is not until it is exposed to the action of the air that it becomes blue. The process for dyeing fabrics blue by means of these plants is the same in principle in all parts of the world, whether carried on in some peasant dyer's hut in India and China, or in the scientifically ordered dyeing establishments of France and England. To the mixture of the prepared indigo in the requisite amount of water a certain amount of lime water and other alkali is added. The liquor immediately becomes clear and colourless. The cloth to be dyed is then passed through the liquor several times, wrung out, and exposed to the air. As it dries the oxygen of the air acts on the colourless liquid contained in the pores of the cloth and turns it blue. When dried the cloth is again passed through the dye vat, and the process is repeated until the desired tint is obtained. There are many other plants besides those which have just been enumerated, such as the Isatis tinctoria, the Althæa rosea, Wrightia tinctoria, and the Hibiscus rosa sinensis, which also yields a blue dye under similar circumstances.

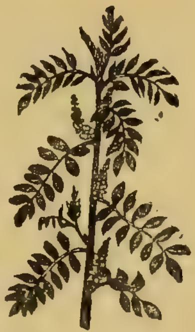

Fig. 3.—Indigofera tinctoria.

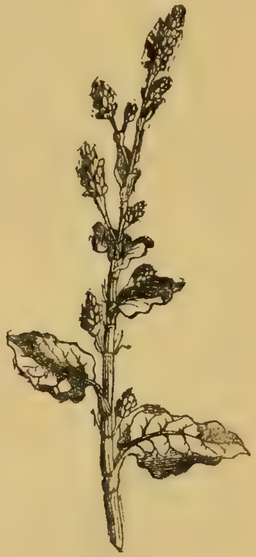

Fig. 4.—Polygonum tinctorium.

The Isatis tinctoria, or Woad, it will be remembered, was used by the ancient Britons instead of broadcloth. There are several specimens of mummy cloth in the British and other museums, which chemical analysis proves to have been dyed with indigo. C. W. Quin.

THE INDOOR GARDEN.

SPECIMEN SCHIZANTHUSES.

As greenhouse annuals the Schizanthuses are unsurpassed in beauty, and they are, moreover, within the reach of every one who has the least ambition for plant growing. It is not many weeks ago since there were some fine examples of them shown at the summer exhibition of the Liverpool Horticultural Society, where they created quite a sensation, and not a few people were heard to exclaim that they were the prettiest flowers which they had ever seen. What noble specimens they are, too! said more than one admirer. What a time they must take to attain such a state of perfection! Judging from these and similar remarks, it is clear that the cultivation of some of our most useful plants is not generally understood; indeed, is not even known amongst that class to which flowers that are easily cultivated are so great a boon. Half-a-dozen Schizanthuses or so in a greenhouse or conservatory from April onwards are about as pleasing objects as anyone could wish to possess; the only difficulty (and it is one easily overcome) is in being able to procure seeds true to name and selected with care from superior varieties. The seeds should, therefore, in all cases be got from a trustworthy source. From the beginning to the end of August is the best time during which to sow; or, what would be still better, to aim at a succession by making one sowing at the beginning and another at the end of that month. The seeds may be sown either in pots or pans, keeping each variety distinctly named, so that the requisite number of each may be potted when they are fit to be handled. Drain the pots or pans slightly, and cover the drainage with some rough material; then fill up to within ½ in. of the surface with any ordinary soil nearest at hand, and run a surface sprinkling through a fine sieve; press all moderately firm, and on this scatter the seeds thinly, and cover slightly with the sifted mould. If the soil be moist when used, and the seed-pans be placed in a frame which is kept syringed and shaded, no watering will be necessary before the seeds germinate—a process that soon takes place under favourable conditions. Gradually inure the young seedlings to the light, and keep them close up to the glass to induce a sturdy habit of growth. These, like other rapid growing plants, require most attention when young; for instance, if they are kept unnecessarily shaded for a few hours, or are kept too far from the light, or are neglected in the seed-pans till they become lanky or are debilitated for want of light and air, it is next to impossible to resuscitate them. When the seedlings are fit to be handled, prick them off into pans filled with soil composed of equal parts of loam and leaf-mould with a sprinkling of river sand, and keep them on the shelf of a cold greenhouse till such time as they are strong enough to be potted. When this period has arrived, the selection of soil in which to pot them will have to be considered as well as the form which the plants are intended to assume. A compost in which Chrysanthemums or Fuchsias will grow will answer admirably, only it might be used a little poorer for the winter potting in order to induce a hardier and firmer texture of growth. Pots 6 in. in diameter need not be exceeded for winter use and the plants should have a cool airy position with as little water as possible during the winter months. Previous to entering into other details, the form of training should be determined, in order that future operations may be directed towards the fulfilment of the object in view. Taking the habit of the plant into consideration, the bush form is the best mode of training that can be adopted, that of the pyramid or cone being the next most likely form to please those who have a leaning towards formality. Assuming, then, that the plants are established in 6-in. pots, and are placed in favourable winter quarters, those that are intended to be grown into handsome bushes should have their points pinched out when they are from 9 in. to 12 in. high; and, coiled round the rim of the pot and pegged down, little growth will of course take place during the winter—the less the better—till after the turn of the year, when they may be potted on into 9-in. pots, using a compost consisting of loam, leaf-mould, and rotten manure in such a condition that it can be rubbed to pieces with the fingers and incorporated with the soil. The young shoots will now have grown a few inches in height, and an upright stake painted green should be placed to each. It is not necessary at starting to train each shoot in a perpendicular direction, for whilst the shoot is fastened to the stake at its base, its point should be inclined either in an oblique or downward direction, so that each shoot may in turn produce a number of other shoots to furnish a handsome specimen. This can be done as soon as shoots enough have been formed upon which to operate. For specimens of any size, the final shift need not exceed a pot 12 in. in diameter, and if the soil be rich and open and ordinary attention be given, every stake will be covered by the end of April, and any training attempted later would detract from the natural form of the plant, except just tying in a stray or straggling shoot. Other forms of training are managed on a similar principle, the only difference being in the shape alone. Willows inserted at the sides of the pot, pulled together in the shape of a balloon, and fastened about the middle to a wire hoop, in order to keep them in shape, make a good foundation, provided the after-training is not overdone. The one thing to be kept in view throughout in the cultivation of these plants is to pay strict attention to minute matters, to keep them always while growing close to the glass, with abundance of air, but sheltered from draughts or cutting winds. As regards varieties, selected forms of retusus and retusus albus are not easily surpassed; they make excellent plants for hanging baskets. W. Hinds.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Tropæolum tricolorum Deeply Potted.—"A. D." says that "the tubers of this Tropæolum increase but slowly." This is doubtless true when they are potted, as they frequently are, so that a great part of the tuber is exposed; but if they are potted as deeply as one would pot a Potato it will soon be found that they increase in size rapidly; not only so, but from the same tuber one may readily get the long-shaped tubers of Jarratti and the round ones of tricolorum. At any rate, such is my experience in growing them for many years, and nearly always in houses under Vines.—S. Garland, *Castle Street, Salisbury.*

Begonias as Basket Plants.—The improved kinds of tuberous-rooted Begonias, now everywhere so abundant, make excellent basket plants. In this way their large, brilliantly-coloured blossoms, which are naturally of a drooping character, can be seen to advantage, and if grown in good soil and kept well supplied with water in a moderately cool, dry house, they will produce a charming display for months in succession. On rockwork, too, in any corner of a conservatory or greenhouse, or even out-of-doors in a warm corner, they grow and flower freely and are exceedingly effective. To tall, light-leaved, sub-tropical plants, in a warm, sheltered situation, they would add variety of colour and be much more satisfactory than plants of other kinds often used for such purposes.—S.

Filmy Ferns and their Culture.—Any one interested in these most beautiful of Ferns may grow them successfully without covering them with bell-glasses or keeping them in warm houses. In confirmation of this we may refer to a houseful of them in the Boxhill Nursery. It is of small dimensions and sunk in the ground, so that the eaves of the roof, which is of octagon shape, are only just above the surface. It is entered by means of rustic steps through a narrow span-roofed house, in which hardy British Ferns are growing amongst virgin cork. The inside of the Filmy Fern house is lined in the first place with old railway sleepers, placed in an upright position, and which support the roof. These are covered with virgin cork, on which are growing various kinds of Ferns. The Filmy varieties, consisting of fine specimens of Trichomanes radicans, Todea superba, T. pellucida, and others, are growing in pots or pans placed on a bank, raised 3 ft. or so above the groundfloor and extending all round the house, excepting at the doorway. The side walls are built with rough stones, among which grow Club Mosses and small Ferns. A canvas shading under the roof is left there summer and winter, but no means are provided for heating the house artificially. Inside it is easily kept damp and close, and under such conditions Filmy Ferns grow remarkably well both in summer and winter.—S.

Pelargonium John Watson.—This is a strong-growing zonal, which produces very large trusses of scarlet flowers in the greenhouse all the year round. I cut a truss from it this week which measured upwards of 5½ in. through, and contained over 120 pips and blooms. It is well worth the attention of amateurs, as it forms a conspicuous feature for the back of the stage in a conservatory.—W. A. Smith, *Higher Broughton.*

THE CHUSAN PALM IN NEW ENGLAND.

Some two or three years ago I sent you a short notice of the flowering and fruiting of the Chusan Palm (Chamærops Fortunei); that was, I think, in the spring of 1874. The two plants are now coming into bloom again, and in a week or more will make a grand display. The male plant is really beautiful. The bunches of flowers are from 2 ft. to 3 ft. long, and the countless number of golden stamens, of which the flowers are comprised, present a bunch of the richest golden hue, intermingled with massive fronds of the deepest green. The female plant is not so showy, but the clusters of blossoms are the same length and bunched in the same manner. There are four spikes on the latter and three on the former. The plants are in tubs and have not been shifted for five years; they are about 9 ft. high. In the winter of 1873-4 they were wintered in a cool house, where the temperature fell as low as 15° occasionally. The three succeeding winters they were put into the greenhouse, on account of the room being wanted for other plants, and they showed no signs of blooming either year. Last autumn we left them outdoors until ready (January 1), or until the temperature fell as low as 13°, when we removed them to the packing shed, digging a hole in the ground to let down the tubs from want of head-room. Here the temperature ranged from 32° to 12°. They were placed outdoors again early in April, and are now (June 15) nearly ready to flower, the flower-stems first making their appearance two weeks ago. Some cultivators may think there is beauty enough in a Palm without the blossoms, as is the case with most kinds, but the Chusan Palm is an exception. Not only are the huge clusters of golden flowers remarkably showy, but the great bunches of berries which succeed, covered with the azure bloom of the richest Plum when ripe, and going through all the changes from green to that tint, are quite as attractive as the flowers. Aside from these merits, it comes so near being hardy in our severe climate, that it is as yet the only Palm that can be used as a decorative object for the lawn early and late in the season, or that can be wintered without a greenhouse. It may be safely wintered in any stable, shed, or cellar where the temperature does not fall below 10°, protecting the roots by a good covering of leaves. We have now hundreds of young Palms raised from the seeds of the previous fruiting, and, though we have not been much of a believer in the acclimatation of even half-hardy plants, it may be that these seedlings will prove quite hardy, just as the imported Douglas Firs are tender, while the seedlings from trees raised in our climate are hardy. As a hardy Palm for the climate of England, it must possess a value which does not appear to be generally appreciated. C. M. Hovey.

Boston, Mass.

A Reach of Park Water.

Leptospermum bullatum Hardy in Valencia.—I see (Vol. XIII., p. 613) allusion made to this growing out-of-doors for three winters in Kent. If this is a matter of any interest, I may as well say that I have had it out now for nearly twenty years without its having received any special protection or care, and I have recently, say for one or two winters, had other New Zealand plants out without any protection, except a few branches to save them from storms, and they are thriving admirably—for instance, the Pittosporum tenuifolium, Corinocarpus lævigatus, Suttonia australis, Dysexylon spectabile; and though it is too soon to speak with absolute certainty of their hardiness, I have little doubt of their suitability to our climate here. I may as well mention that I have the Madeira Clethra arborea, which has now been out-of-doors for about nineteen years without having received any protection, except that of surrounding shrubs. It is now 16 ft. or thereabouts in height, with most glorious foliage, and covered with formed, but as yet unopened, blossoms. It is certainly one of the finest shrubs that it is possible to see.—K. K.

JAPANESE MAPLES.

Amongst the many importations from Japan—both as regards flowering and fine-foliaged plants—that we have had during the last few years, few promise more useful results than the several varieties of Maple. The delicate, Fern-like character of the foliage of some, and the beautiful variegation and bright colours of others render them beautiful objects for masses in contrast with each other, or as single specimens on Grass, and in the sub-tropical garden they are also highly effective, the older variety, Acer Negundo variegatum, being well known for the beautiful effect which it makes in the form of dwarf standards rising above a groundwork of Coleus or of plants with similar foliage. I lately saw some fine examples of them in the Coombe Wood Nursery, where they have stood fully exposed in quite open positions during several winters. They would doubtless grow rapidly sheltered by large trees or in such positions as are usually selected in gardens for fine-foliaged plants. In table decorations, on a white cloth, the elegantly cut leaves of such varieties as Acer polymorphum dissectum or A. p. palmatifidum would be shown off to excellent advantage. Even as pot plants for conservatory decoration they are highly effective, forming, as they do, quite a distinct feature, and contrasting well with the abundance of flowers usually found in such structures during the early part of the year. Being of moderate growth, they might be kept of a serviceable size for decoration in pots for many years by simply shaking them out and re-potting them in the same sized pots; and when turned out of doors the pots should be plunged in leaves or ashes, as the roots of even the hardiest plants are more liable to injury from extremes of temperature or drought than the top growth. J. Groom.

The Golden Retinospora as a Hardy Evergreen.—I should like to tender my testimony in favour of this beautiful little golden evergreen on one special account, namely, that of hardiness. It is a well-known fact among all who have attempted to grow evergreens on the bleaker points of the New England shores, such as the cliffs at Newport, &c., that generally they are not capable of resisting the effect of severe ocean winds laden with salt spray. The Norway Spruce is soon rendered thin and meagre and the Hemlock utterly destroyed. Arbor-vitæ, Junipers of certain varieties, and Yews shrivel up and die, and even Scotch and Austrian Pines, in most cases perfectly rugged, will in peculiar localities lose the lower limbs, and become naked and bare. These last-named evergreens may, however, be termed fairly hardy, and classed in this respect with the White Spruce, Creeping Juniper, &c. Indeed, so few evergreens thrive in full exposure to the vicissitudes of such situations, that the use of deciduous shrubbery and trees is to be specially commended for the main and most exposed plantations of these localities. Strange to say, however, a Conifer that has been occasionally, with seeming injustice, called tender, exhibits in the worst exposures a vigour and endurance that are really astonishing. The Golden Retinospora, the Conifer I mean, has something in its nature that adapts it to more situations, more pruning, more transplanting, than almost any evergreen that can be named. I do not propose to dwell on the other notable virtues of this Retinospora, but simply to point out this particular quality, tested now for years, that must always entitle it to a high place in the list of the landscape gardener's material. —" Rural New Yorker."

THE KITCHEN GARDEN.

WINTER CUCUMBERS.

The fact that Cucumbers are sold at from 1s. to 2s., and sometimes 3s. apiece, during the winter—even in the provincial towns—is sufficient to show that they are not plentiful. Notwithstanding the high price which they fetch, we believe that market gardeners do not find winter Cucumbers to pay as a rule, but prefer to cater for the market between April and November, when a crop is sure. In private establishments they do not pay the expense of labour and fuel in one case in twenty, judging from the examples of culture one sees. Cucumbers can be grown successfully, however, and, we think, remuneratively, throughout the winter and early spring months by those who understand their culture—for winter culture and summer culture are two very different matters. Something, perhaps a good deal, depends upon soil, &c., but most depends upon management. The best winter Cucumber grower we have ever known was Mr. Dick, now of Phœnix Park, Dublin; and it cannot be said that he was favoured by circumstances—unless it was in the variety he cultivated, about which more anon—for he was alike successful at Wynyard in the murky climate of Durham, and in the pure air and genial climate of Dorset, within sight of the Isle of Wight. For many years, to our knowledge, he did not cease to cut fine fruit every day in the year for home consumption, besides sending large quantities to the market at good prices. He grew his plants in a low house, about 40 ft. long, and their roots were confined to a narrow pit of soil about 1 ft. wide and the same depth. He attributed his constant success to restriction at the root, moderate temperature, and last, but not least, to beginning in good time and getting the plants up in a hardy condition against the coming winter. He informed us that the bottom-heat was sometimes as low as 65°, but that he aimed at keeping it at 70° or thereabouts; and that the top-heat fluctuated between 65° and 70°, with a little rise in the sunny weather, but that in severe weather he had a difficulty in keeping these figures up. In addition to this, he pinched and trained methodically, and stuck to that good old variety known as Lord Kenyon's Favourite, the seed of which he had saved himself for many years. This variety, which can hardly be superseded for general excellence and as a winter forcer, is not easily procured true—scarcely at all from the trade, we believe, but it is still in existence, and there is one grower for the markets in the midlands who sends some of the finest samples for sale, and has it true, though he keeps silent about it apparently. We dropped casually on a hamperful of it in the market one day, and were informed by the fruiterer it was the most saleable Cucumber that came to his shop, and he took all of it the grower could send him. These remarks are by the way, however, and to proceed to cultural matters we had better begin with the—

Shape and Size of House for Winter Culture.—The Cucumber house should be a lean-to, sloped at an angle of 45°, and ventilated at the lowest and highest points, back and front, in the usual way. Above all, the heating surface should be ample—sufficient to sustain the temperature at 75°, if necessary, in the coldest weather, and without making the pipes too hot. To do this—and supposing the structure to be 7 ft. or 8 ft. wide, and proportionately high—five rows of 4-in. pipes will be required at least. The extra piping makes it more expensive at the first, but the difference will soon be saved in coal; for in a house where the piping is deficient the stoker is continually stirring the fire, and adding fuel quite needlessly in his anxiety to keep up the temperature. This is where the waste is effected in such cases, for, of course, it takes no more fuel to heat one row of piping violently than it does to heat two rows moderately; it is in the frequent mending of the fire that the coal is consumed. But, in addition to this, very hot pipes in proximity to the leaves of Cucumbers are a fertile source of injury; in fact, there is no greater evil, for everything depends on getting up good foliage and preserving it, and currents from over-heated pipes are very destructive agents. As to the capacity of the house, it should be from 30 ft. to 40 ft. long, where there is much demand for Cucumbers. A house 50 ft. long can be fired with proportionally less fuel than one half that length. Winter Cucumbers do not grow at a quarter of the pace that summer Cucumbers do, and the fruit is long in coming to a usable size; consequently it is necessary to have a much greater quantity of Cucumbers swelling at a time in order to keep up the supply. A house 50 ft. long might all be planted with Cucumbers for the winter; but after the days have turned fairly, and the plants begin to grow a bit, one-half of the house may be cleared out and planted with early Melons, and thus turned to better account. A winter Cucumber house is well adapted for that purpose, and it is a good plan to combine the two together, clearing out the Cucumbers in one half of the house in March, for the Melons sown early in February and forwarded in pots, and the other half some time later, and after the spring-sown Cucumbers come into bearing in the frames. In our winter Cucumber house an early crop of Melons is ripened off early in June in one division, and another crop in July and August in the second division, after which it is again all cleared and planted with Cucumbers for the winter.

Sowing and Planting Out.—Winter Cucumbers should be sown some time between the beginning and middle of August. They will do later than this, but it is desirable to have the trellis covered, or nearly so, by the plants in November, and ready to break into a general bearing condition; and to have them thus far advanced it is not too soon to sow early in August. For plants to come into bearing in February and March, we have sown in September and October; but for the whole winter supply the August-sown batch is the best, as they have more vigour than in plants sown later. We have known such plants bear without intermission the whole year round. The seed should be sown in a bottom-heat of 75° or 80° in a pot of light rich soil, and the plants potted off as soon as they can be freely handled and have made their first rough leaves, and afterwards grown on with plenty of light and air, in a temperature never exceeding the above at any time. Moderately strong growth and small rather than large leaves of flabby texture are most to be desired; an over-luxuriant growth augurs ill for the plants getting through the winter. That kind of growth which the Cucumber produces out of doors in situations where it grows is the most likely to keep green and healthy during the dull and trying winter months, and a moderate temperature and not over-rich soil are the very conditions likely to secure such a growth.

Preparing the Bed and Planting Out.—A bed of soil 9 in. or 12 in. deep and 18 in. wide is quite sufficient to sustain the plants in health and fruitfulness for nearly twelve months, with occasional top-dressings, which should be applied to Cucumbers under any circumstances, and plenty of liquid manure. The best soil is a light, turfy, and rather sandy loam, without any additions in the way of manure or leaf-soil; but should the loam be heavy, it must be reduced, according to its texture, with leaf-mould and sand. Cucumbers prefer a light to a heavy soil; indeed, they will not thrive in a heavy loam either in summer or winter. The plants should be planted in the bed as soon as they are fairly established, but not much later than the beginning of September. They may be put out 2 ft. apart, and the main shoots trained half-way up the roof, when they should be stopped for the first time.

Temperature, Watering, and General Treatment.—Throughout the whole winter the top-heat should range from 65° to 80°, night and day respectively, and always with more or less air; the ventilators should never be entirely closed, even in the severest weather. In cold nights the temperature may drop to the minimum figure (65°) towards the morning, but the more it is kept at 70° the better. By day, and as early in the morning as possible, it should rise to 75°, even in the coldest weather, and to 80° with sunshine. At lower temperatures than these the Cucumber almost stands still, and if higher it is unduly excited, and the growth is weak and poor. As to the bottom-heat, it should on no account exceed 75°, and there is no fear if it stands very frequently at 70°, which is a safer figure than anything above 75°. Very much depends on making good use of fine days. When the weather is mild and fine for the season, it should be taken advantage of to raise the temperature to the maximum point by the aid of fire-heat, and closing early in the afternoon; one good day is worth a week of bad weather in the winter time. In watering and damping some judgment must be used. There is little demand upon the leaves in a house necessarily kept so close as a winter Cucumber house always is, and it is very necessary to keep the bed moist, taking care, however, that it does not get dry in the bottom through being over cautious. Through this cause we have sometimes found the sods in the bottom as dry as dust when examined. It must always be borne in mind that there are hot pipes underneath. Damping and sprinkling should be done only on fine afternoons, and the evaporating troughs may always be kept filled. With the roots in a proper condition as regards moisture, this will be enough; but vigorous syringings may occasionally be given to keep down insects.

In the training of the shoots any methodical system may be adopted that is likely to cover the trellis with wood soonest. Should the plants grow vigorously, they may be pinched at any second shoot or so; but towards mid-winter they usually make little progress, and it is then better to let the shoots extend without pinching. The plants, when they do well, come into full bearing in November, and by the end of that month, or later, the cultivator should aim at having a quantity of fruit set and swelling. This will insure a supply during the most critical period, and until the days are fairly turned, when the plants will begin to grow again. Should there be more fruit hanging than is needed, it should be cut and stored in a cold room, setting each Cucumber on end in a little water; in this way they will keep perfectly fresh for two or three weeks, and the plants will be all the better for being relieved of the fruit. S.

GOOD ENDIVE.

The middle of June is, in most situations, as early as this crop can be profitably sown; and if the sowings are repeated fortnightly till the end of August, there will always be fresh relays of young plants put out, and this is the best way of ensuring a good supply of well-grown Endive. There must, of course, in addition, be a well-manured, deeply-stirred soil; for Endive, like Lettuces, to be crisp and good, must be grown quickly, and on poor shallow land this would be impossible. A liberal supply of moisture in dry weather is also essential, accompanied by frequent stirring of the surface. Liquid manure, when available, will be very beneficial. This will be best given immediately after a watering of plain water, as by so doing its presence will be longer felt than by pouring it on a dry, parched soil. Always sow the seeds thinly, and when they come up single them out, so that no two plants absolutely touch each other. No matter how good the parentage of the stock of seeds may have been, there will always be some weakly plants, and these latter should, on thinning, be taken out. The first sowing should at any rate be made in drills, as if a few plants are left undisturbed from 12 in. to 15 in. apart, they will be less likely to halt prematurely. Later sowings, if the land is scarce, may be made broadcast, but the plants must be transplanted immediately they are large enough, and not be allowed to remain to draw each other up weak and spindling. On the whole, however, sowing in shallow drills will be found the most satisfactory plan, as it facilitates earth-stirring, which, in many ways, is so beneficial to the young plants. There is some advantage in putting a few plants out in different aspects. The main crops should occupy some good open situation, but a few plants of the early sowings, to meet exceptional seasons, might be planted on the north side of a fence or wall. Endive also generally does well on the ridges between the rows of late Celery. The greater depth of soil gives increased development, and in a damp season the elevated site secures freedom from damp. All the later plantings should be made on raised beds or borders if possible, as otherwise, especially if the soil be of a retentive nature, the crop will decay before it can be used. A good breadth from the last July and August sowing should be put out on a south border for late autumn and winter use, to be lifted and planted in frames, or protected in some other way when frost makes its appearance. Endive that is blanched where grown should be allowed plenty of space; 15 in. between the rows, and 12 in. from plant to plant, is not too much. After the plants are tied up, the surface soil from the 15-in. space between the rows may be drawn up round the base of the plants with a hoe, and then, if a flower-pot saucer be turned over the top of each plant, the blanching will be quickly done without any deterioration of flavour, as there is nothing so cleanly as dry earth. The plants, of course, must be dry when this tying and earthing up is done, or they will rapidly decay. Blanching in winter may be quickly done by taking the plants when full grown or nearly so, a few at a time, into a Mushroom house, or any other dark, warm structure, and, as they make abundance of fibry roots that hold the soil together, they may be easily lifted with balls, and taken anywhere. In this respect they are much more manageable than Lettuces. As regards varieties, Earley's Digswell Prize is a very good variety of the green curled section, and the white Lettuce-leaved Batavian will be useful in autumn.—"Field."

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Early Cauliflowers.—These form an important crop in many of the London market gardens, and the excellent way in which they are cultivated can only be reached by those who fully realise the fact that even the smallest detail connected therewith if worth doing at all is worth doing well. In the neighbourhood of Fulham might lately have been seen several acres fit for cutting and in process of being packed for market, and it would be no exaggeration to say that not 1 per cent. could be selected from them that fell below the average of really good heads. This amount of perfection is the result of certain growers making a speciality of certain crops, and devoting their whole energy to obtaining first-class produce. This is the only way in which good prices can be got at all seasons. As a rule, market growers save their own seed, and, by constant selection from the very best, they have produced strains that combine a dwarf sturdy habit with a large head, heart, or flower, as the case may be. These growers, from the abundance of manure which they readily obtain, are enabled to get two or three crops without digging the ground; but when they perform that operation it is done thoroughly, and in the case of any crops that are planted at so wide distances apart as Cauliflowers, an intermediate crop, such as Lettuce, is planted between them. I may also remark that particular dates on which to sow such crops as the Cauliflower are more rigidly adhered to in market gardens than in private ones, as the high manuring renders the land almost like a hotbed, and the growth of such crops in favourable seasons is exceedingly rapid and luxuriant.—J. Groom.

Peas from Old Seed.—Some of the finest rows of Peas which we have seen this year are growing in Mr. Appleby's nursery at Boxhill, and consist of Bedman's Imperial Old Marrow, a Pea of great excellence, but one not now grown so much as formerly. They were the produce of four-year-old seed, the rows were 5 ft. through, and the crop an extra heavy one.—S.

Rooks and Potatoes.—Those who are troubled with rooks unearthing young Potatoes at this season would do well to adopt the following preventive measures, which have been found to be thoroughly effectual: Get several sheets of brown paper, wet them, and sprinkle dry gunpowder over them; then tie them to the tops of stakes placed here and there amongst the Potatoes, and set light to them; the paper being wet will not burn, but will retain the smell of powder for a long time, and the rooks will not come near whilst that lasts.—S. J.

GARDEN BOTANY.

(Continued from p. 10.)

The Calyx.

The calyx is polysepalous when the sepals are free to the base and fall away separately, as in the Poppy or Buttercup, or can be detached separately, as in Geranium (fig. 296); and gamosepalous when the sepals are more or less united, as in Corrigiola littoralis (fig. 297) and Primula (fig. 298).*

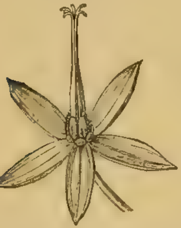
Fig. 296.—Polysepalous calyx of Geranium roseum, having five equal sepals.

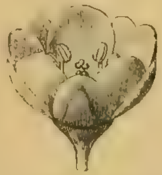
Fig. 297.—Gamosepalous 5-partite calyx of Corrigiola littoralis.

The terms entire, toothed, fid, partite, &c., are applied in the same way to calyxes and corollas as they are to leaves. The gamosepalous calyx is either free from the ovary, as in Agrostemma (fig. 299) and the Primrose, or adherent to it, as in Fuchsia.

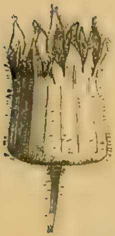
Fig. 298.—Gamosepalous toothed calyx of Primula sinensis.

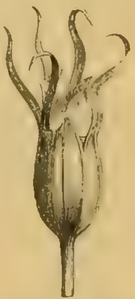
Fig. 299.—Agrostemma Githago, showing 5-fid calyx.

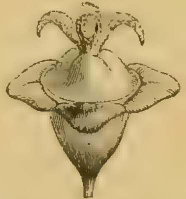
Fig. 300.—Mesembryanthemum, calyx adherent to the middle of the ovary.

The part of the calyx that is free above the ovary (future seed vessel) is the limb, which is sometimes very small or almost obsolete, or it is more or less distinctly lobed. In Mesembryanthemum (fig. 300) the calyx is adherent to about the middle of the ovary, and it has a distinctly four-lobed limb.

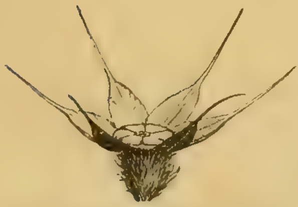
Fig. 301.—Calyx and fruit of Gaillardia picta.

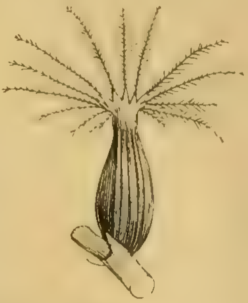
Fig. 302.—Fruit of Valeriana, crowned with a feathery calyx limb.

The calyx of Fuchsia is adherent to the ovary, and produced above it in a long tube and deeply four-lobed at the top; it is also noteworthy as being one of the not very numerous examples of a coloured (not green) calyx. In the Compositæ the calyx limb is usually reduced to a number of plumes, as in the Dandelion and the Thistles, and it is stalked in the former and sessile in the latter.

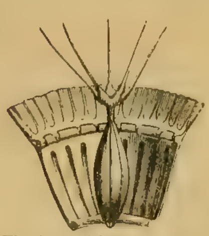
Fig. 303.—Calyx of Scabiosa atropurpurea, the investing involucre cut and spread open.

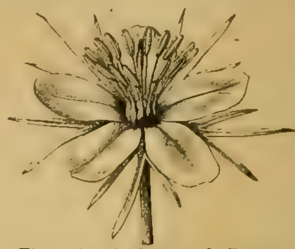
Fig. 304.—A flower of Peganum harmala, the sepals of which are deeply cut.

The calyx limb of the Compositæ has received the special name of pappus, and it presents a great variety of modifications useful in classification. The pappus of Chicory consists of short scales; in Zinnia it consists of two bristles; in Gaillardia (fig. 301) it is not unlike the ordinary calyx limb of other natural orders.

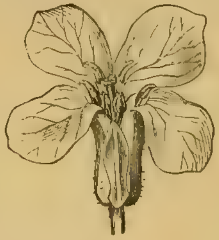
Fig. 305.—Wallflower; two of the sepals gibbous at the base.

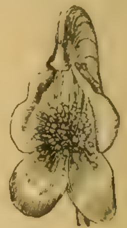
Fig. 306.—Flower of Aconite; one of the sepals the shape of a helmet.

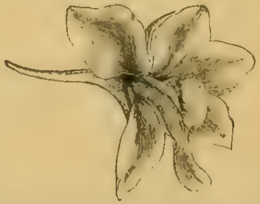
Fig. 307.—Flower of Larkspur; one of the sepals spurred.

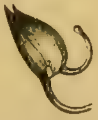
Fig. 308.—Flower-bud of Balsam; posterior sepal spurred.

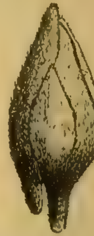
Fig. 309.—Flower-bud of Callisthene minor, showing the spurred sepal.

In some Compositæ it is cup-shaped, or reduced to a narrow rim, or quite obsolete, as in the Nipplewort and Daisy. Valerianaceæ (Valeriana—fig. 302) and Dipsaceæ (Scabiosa—fig. 303), small natural orders allied to the Compositæ, have a similar calyx limb. Both polysepalous

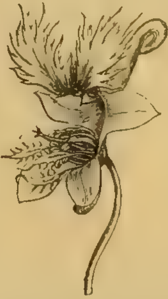
Fig. 310.—A flower of the Canary creeper, Tropæolum aduncum, the posterior sepal spurred.

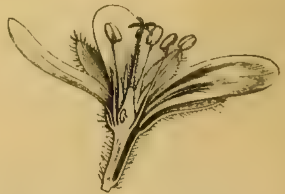
Fig. 311.—Longitudinal section of a flower of Pelargonium, showing that there is a cavity answering to the free spur of Tropæolum. Reduced.

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* When the parts of the same whorl, as the sepals, are united, the union is termed cohesion, and adhesion when the parts of different whorls, as calyx and seed vessel, are confluent.

and gamosepalous calyxes have regular and irregular modifications. (See foregoing paragraph on regular and irregular flowers.) The calyx of Geranium (fig. 296) is polysepalous and regular, and the sepals are entire, whilst in Peganum (fig. 287) they are deeply divided into narrow segments. There are several very singular irregular calyxes belonging to quite familiar flowers. Two of the sepals are gibbous, or saccate, at the base in the Wallflower (fig. 305); one of the sepals in the flowers of Aconite is helmet-shaped and larger than the rest (fig. 306); and in the Larkspur (fig. 307) one of the sepals is produced below in the form of a hollow spur. Compare the flower of Aquilegia with the last; it has all the petals spurred.

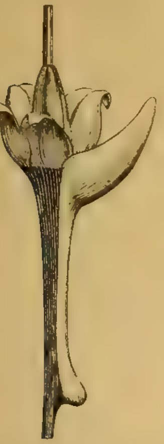


Fig. 312.—Calyx of Pelargonium.

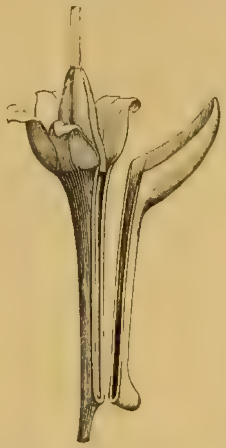


Fig. 313.—Calyx of Pelargonium; the spurred sepal detached.

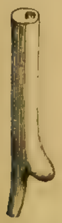


Fig. 314.—Transverse section of the pedicel of Pelargonium, showing the cavity formed by the adnate spurred sepal.

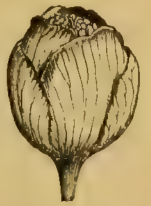


Fig. 315.—A flower of Helleborus fœtidus, which is apetalous, and whose sepals are entire.

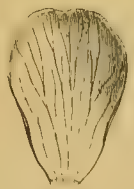


Fig. 316.—A detached sepal from the flower of Helleborus fœtidus.

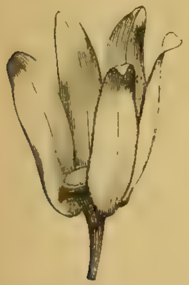


Fig. 317.—Calyx of a flower of a Violet.

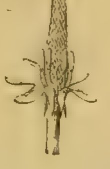


Fig. 318.—A flower of Myosurus; all the sepals produced below the point of insertion in minute spurs.

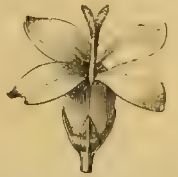


Fig. 319.—Flower of Asperula odorata, showing the regular four-lobed calyx.

Other examples of spurred calyxes are the Balsam (fig. 308), Callisthene (fig. 309), and the Canary Creeper (fig. 310). In the latter the sepals cohere, forming a gamosepalous calyx. At first sight one would not take the genus Pelargonium to be closely allied to Tropæolum (Canary Creeper, Nasturtium), but a cursory examination will reveal some unexpected characters which the two genera possess in common. In Pelargonium, as in Tropæolum, one of the sepals is spurred; in the latter the spur is free, as shown in fig. 310, whilst in the former the spur is adnate to the pedicel (see figs. 311 to 314). Except when spurred, the sepals are usually produced only above the point of attachment to the receptacle, as fig. 315, but in the Violet (fig. 317) they are produced below the point of attachment. The space between the two anterior sepals is where the spur of the corolla protrudes. All the sepals of Myosurus (fig. 318) are spurred below. Fig. 319 represents an example of a regular gamosepalous (monosepalous of some books) calyx, and figs. 320 and 321, varieties of the irregular type.

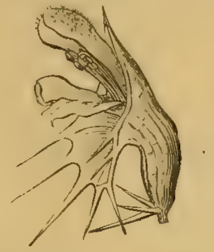


Fig. 320.—Irregular gamosepalous calyx of a Labiatæ.

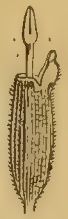


Fig. 321.—Irregular gamosepalous calyx of Lavandula spica.

Duration of the Calyx.—In the Poppy and most of the plants belonging to the same natural order the sepals fall away before the petals expand, and the petals drop the same day that they become fully expanded. Sepals which fall so early are termed caducous, and if they remain attached during what may be termed the flowering period and then fall, they are deciduous. Frequently, however, the calyx, whether free to the base or adherent to the ovary, does not fall before the fruit, and it is termed persistent. The remains of the calyx lobes of the adherent calyx of Gooseberry, Currant, Apple, &c., may be seen at the apex of the ripe fruit, and in the Raspberry, Strawberry, &c., there is the green, free calyx at the base of the ripe fruit. In many instances the calyx is not only persistent, but it grows out (is accrescent) during the ripening of the fruit. We have already alluded to the enlarged calyx of the barren

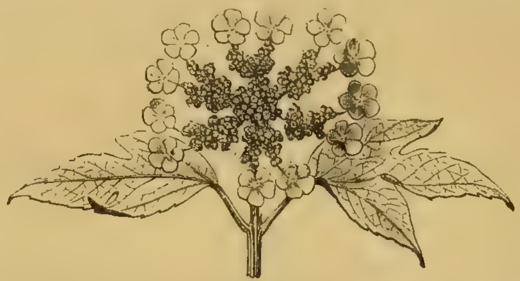


Fig. 322.—Reduced inflorescence of Hydrangea, in which the outer flowers present a very greatly enlarged calyx.

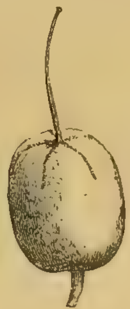


Fig. 323.—Fleshy calyx of Gaultheria, enveloping the fruit.

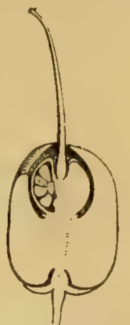


Fig. 324.—Section of the same, showing the seed-vessel.

flowers of Hydrangea (fig. 322). The calyx of Gaultheria (figs. 323 and 324) becomes quite fleshy, and the lobes converge at the tips and enclose the seed vessel. Among ornamental accrescent calyxes those of Howardia caracasana, Mussænda frondosa, and numerous other species, and two species of Calycophyllum are the most remarkable. One of the lobes of the gamosepalous calyx grows out like a stalked leaf, 1 in. to 6 in. in length, according to the species, and is of a pure white or some brilliant colour. It may be mentioned, too, that there is a natural order of large timber trees, chiefly natives of tropical Asia, called the Dipterocarpeæ, characterised by having two or more of the sepals grown out and forming wing-like appendages to the fruit, giving it somewhat the appearance of a shuttlecock. The gamosepalous calyx is usually persistent, even to the limb, whilst the contrary commonly obtains with the polysepalous calyx. W. B. Hemsley.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Odontoglossums.—Where the different varieties of these are grown in quantity, especially of the O. crispum, or more generally understood O. Alexandræ, section, of which there are so many forms, with the newer O. cirrhosum, which also differs very much in size of flower and marking, some or other will be in bloom through a considerable portion of the season. Those that flowered early will now be making their growth, and should be encouraged to push on by placing them at the warmest end of the house and keeping them a little closer, except during that portion of the day when air is freely admitted. They are water-loving plants, yet it is possible to keep them too wet, the result of which is that the leaves become diseased and spotted. This is almost inevitable if there be any stagnant water about them through the plants having been allowed to remain in the same material until it has got into a decomposed soapy condition, in which case whatever stage of growth they are in they should be at once turned out and replaced in fresh soil. Where a large collection is grown it is always necessary to keep an eye to this, for, although the time for general potting is undoubtedly at the period just before growth has commenced, yet it invariably happens that there are a number of plants, either through having made late growth or other causes, do not admit of being operated upon at the time when the majority receive attention in this way. For this reason it may be said that the potting season in the case of any considerable collection of Orchids is, to some extent, continuous. Another cause by which the soil in which these plants are grown gets into an unsuitable state is through the pots being allowed to stand on a smooth surface, such as slate shelving, kept generally moist. The water from the slates is regularly soaked up, thus keeping the roots almost as wet as if the pots were set in saucers. This plan of setting the plants on smooth surfaces is easily avoided by having the stages covered with small pebbles, which will allow water to be applied without the base of the pots being in absolute contact with it. Odontoglossums that succeed with warmer treatment than that just named, such as O. bictonense, the different forms of O. grande, O. coronarium, O. citrosmum, O. Phalænopsis, O. Rossi, O. maculatum, O. hastilabium, O. vexillarium, and O. Roezli, that are now making growth, should be kept a little warmer—in such a temperature, indeed, as that usually given to the generality of Cattleyas—keeping up sufficient moisture in the atmosphere with the requisite quantity of water to the roots and enough air through the middle of the day. Perfect cleanliness, as regards insects, should be aimed at. Greenfly is difficult to eradicate, from the fact that the plants dislike fumigating in amount sufficient to destroy it; but if the use of a sponge, with a little Tobacco water, not so strong as to leave a dirty sediment on the leaves, be persevered in, it can be exterminated. The little yellow thrip must be in like manner sought after. This, from its small size, frequently escapes detection until a good deal of mischief is done, as, unlike the aphides, that attack the outside of the unfolding leaves, it takes up a position where it is not so easily got at—right down in the inside of the young growth. Where sufficient light and air are given to the plants, to impart the requisite solidity, most Odontoglossums will bear syringing slightly overhead early enough for the water to get dried up before evening, which will have the effect of banishing thrips, as they cannot exist on the surface of leaves that are moist, even for a few hours in the day.

Epidendrums.—E. vitellinum, so desirable for the bright orange-scarlet colour of its flowers, will, in most cases, now have done blooming; and where potting is required (though it does not need very much root room) that should have attention, and the plant forthwith encouraged to make growth. It will generally be found to do the best amongst cool-growing plants, as will also E. erubescens, E. sceptrum, and E. pterocarpum.

Cool Oncidiums.—Amongst the many Oncidiums worth growing, there are a few that succeed best in a cool house, such as O. serratum, O. superbiens, O. Weltoni, O. Roezlianum, O. nebulosum, O. macranthum, and the different forms of O. leucochilum. At the same time, they will generally do better with a little more warmth and with less water at the roots than the coolest Odontoglossums and Masdevallias, &c., but where this cannot be afforded them, a slight compromise should be made by putting them at the warmest end of the Odontoglossum house, admitting less air near them, or they may be set at the coolest end of the intermediate house, where they will be still further accommodated by giving the most air near where they are placed; and in most cases the latter arrangement may be found preferable, as the somewhat collective drier conditions under which Cattleyas, Lælias, and kindred plants are grown will suit Oncidiums better.

Intermediate Oncidiums.—There are a few of the older, somewhat despised Oncidiums that for providing cut flowers and for general effect are amongst the most useful that can be grown. For instance, there is nothing in the whole range of yellow-coloured flowers that equals Oncidium flexuosum, either for bouquets, button-holes, or vases of cut flowers. It is an easily-grown plant, providing it be kept quite clear from white scale, and so placed that cockroaches, woodlice, or slugs cannot get admittance to the pots or baskets (the latter much the most suitable) in which it is grown, as, from its natural erect habit of growth and the way in which it throws its roots out as it progresses upwards, they are directly exposed to the attacks of every thing that will prey upon them; for this reason it is much the best suspended from the roof, in which position it will attain the most strength and bloom proportionately. If, after the first flowers produced in the season are over, the heads of the bloom-stems are cut off just below where they branched out, leaving the lower portion of the stem, these will push out and flower a second time, which is so much gained over the usual method of cutting the whole of the flower-stems away. It likes plenty of water and does well syringed overhead every day; it requires an intermediate house temperature. Amongst the best of the Oncidiums also wanting intermediate house treatment may be named O. ampliatum and its larger form O. ampliatum majus, O. crispum, several forms including the fine-flowered O. Marshalli, O. Cavendishi, O. bicallosum, O. ornithorrhynchum, O. Wentworthianum, O. Rogersi, O. Barkeri, O. cornigerum, O. sarcodes, and O. Krameri. These are worth a place in any collection, succeeding well in an intermediate house, but should have more water at the roots than Cattleyas. With these the best use ought to be made of the sunny weather that may be looked for during the next two months by closing the house with a moderate amount of sun-heat in the afternoons. The warmth thus obtained is vastly more conducive to the well-being of the plants than fire-heat. The intermediate house plants collectively will be benefited now for a couple of months by thus closing the house earlier, for even should the temperature rise by the action of the sun for a few hours some degrees above that which is usually considered sufficient for these subjects, now, whilst there is a maximum of light, no harm will be done, and increased size and strength of growth will be the result.—T. Baines.

Stoves.—More air will now be required by plants in the stoves than earlier in the season, when the growth was young and tender, and liable to injury if much external air came in contact with the partially developed foliage; but, in its admission, always be guided more by the state of the weather than the time of the year. In our changeable climate we often, even in the height of summer, experience cold days, when, if a considerable volume of air be admitted, it reduces the temperature and checks growth. Even when the weather is hot and air can be given in abundance it should be taken off sufficiently early in the afternoon, while the sun has yet power on the glass. By this means the temperature of the house rises very considerably and the growth of the plants be kept up until the wood is well matured. The numerous insects to which stove plants are subject, such as mealy-bug, scale, and thrips, at this season increase apace. Those who are so unfortunate as to have mealy-bug to contend with have an unceasing task before them so long as a trace of the pest exists upon their plants. Later in the autumn, when growth is completed in most things, is the best time to make a determined onslaught on the insect. Its destruction will be rendered much easier if it be kept well down during the summer, for if once it be allowed to get such a head as is sometimes seen, where it not only half smothers the plants, but gets into crevices in the wood and brickwork, it is difficult to deal with. There are so many prescriptions for the destruction of this and similar insects, all in their turn by some pronounced infallible, that it is a wonder any are left alive. Many of the insecticides are recommended to be laid on with a camel's-hair brush or a sponge; this might answer if only an odd plant or two were affected, or if there was an unlimited amount of time at disposal for this kind of work; but this is seldom the case, and some readier means must therefore be resorted to, the best of which will be found to wash the plants with Fowler's insecticide for scale; at this time in the season hard-wooded plants will bear it at a strength of 5 oz. to the gallon, syringing it on at a temperature of 90°, so as to reach every part. For bug, which is harder to kill than brown scale, Abyssinian mixture is the best, using it at from 5 oz. to 6 oz. to the gallon, according to the nature of the leaves of the subjects upon which it is used. Where this insect is kept under during the summer months, an attempt in the autumn to completely destroy it is much more likely to be successful. Such kinds of Gloxinias as are considered desirable to increase should now be propagated. The leaves being fully matured, are now in a much better condition to form roots than earlier in the season when they were soft. In varieties of which there are a sufficient number of leaves the stalks of those used should be shortened to about 1 in. below the leaf; three or four of these should be placed round the sides of a 6-in. pot, sufficiently drained and filled with a mixture of two parts of loam to one of sand, the cuttings being put in so deep as to cover the stalk and about ½ in. of the base of the leaf. Where leaves for propagation of any particular sort are scarce, several roots may be had from a single leaf by laying them down on the surface of the soil in a seed-pan filled with the compost, as above. The mid-rib of the leaf must be cut through in five or six places and laid with the underside downwards, a small stone, just large enough to keep the severed part of the mid-rib at the point where cut touching the soil, being put over each place where it is thus cut. In this way bulbs will be formed, but these will not, individually, be near so large as when the stalks are inserted, and each leaf employed to make a single root. Old plants of Poinsettias should now be encouraged to make strong sturdy growth. Another useful winter-blooming plant is Begonia dipetala. If small plants of this are now at hand and grown on freely they will furnish quantities of bloom in the winter. Allamandas, Clerodendron splendens, and Dipladenias showing flower freely should now be trained round their trellises, but not too closely, as that gives them too stiff an appearance, and also has a tendency to cause premature decay in the leaves, which turn yellow and decay; this has also a tendency to weaken the plants and reduce their blooming capabilities. Expose them to all the light possible, using just sufficient shading material to break the direct rays of the sun; by this means the flowers will be produced much stouter, and will stand in a cut state, if required, much longer than when treated more tenderly. Autumn-struck cuttings of hard-wooded stove plants, such as Ixoras, Allamandas, Gardenias, &c., which have been potted during the winter, will by this time require a further shift. The aim of the cultivator ought to be to get the plants up to the required size as quickly as possible; if such plants are allowed to become stunted through being pot-bound, it takes a long time afterwards to get them to move; in fact, it is better to commence with a cutting than to grow a plant on that has been allowed to get into such a condition. It would seem that the increased demand for cut flowers at the present day is illimitable; it therefore behoves gardeners to make provision to meet it. In most establishments, large or small, there will be some things held in greater esteem than others. Therefore it is impossible to name any plants in particular that would be held in general estimation. Yet during this and the next two months flowers from stove plants will be largely used for mixing with Roses and other outdoor productions. There is a great charm in variety; yet the old system of growing collections of plants where the object was to include the greatest number possible, both of species and varieties, is anything but calculated to meet the requirements of the present day; it is much better to confine to a reasonable extent the number of varieties of plants grown to such as are the most attractive, last the longest, and are held in the greatest estimation. If there is one plant more than another that is more generally useful as a decorative stove or intermediate house plant, and capable ot producing quantities of cut flowers for eight or ten months in the year, it is Ixora coccinea. Now is a good time to either strike cuttings or procure plants of it; and if kept clean from insects, and grown under the same conditions as to temperature and atmospheric moisture, summer and winter, that will suit Cucumbers, it will amply repay for the trouble bestowed upon it. Its flowers will stand in water for a week, and it can be cut with impunity without injuring the plants.

Ferns.—In the tropical Ferneries fire-heat can now be almost dispensed with; the temperature, however, should not sink too low. Maintain a moist atmosphere; water growing plants abundantly, dew them gently overhead with tepid water, but refrain from damping the fronds of Gymnogrammas, Cheilanthes, Maiden-hair, and other such Ferns, and re-pot any that have well filled their pots with roots and that are not already in large pots. Seedling Ferns must be pricked out after they have germinated and can be transferred without difficulty from the seed-pans. Spores should always be sown as soon as they are ripe, and young plants growing on Asplenium bulbiferum and viviparum, Woodwardia orientalis, and others should be separated and treated as ordinary plants, or the fronds containing them may be taken off and layered like Begonias. Keep a sharp watch over insects of all kinds, remove decaying fronds, and everywhere preserve neatness and order.

Pelargoniums.—The beauty of large-flowered kinds that have been the first to bloom will now be over, [and it is not desirable to allow them to push a second growth and flower again, which they will if not interfered with, as this prevents their being cut down and making growth that will bloom early next spring. If there be a scarcity of plants to take their place, and flowers be required, a portion may be allowed to go on blooming for a time. Move at once the plants that flowered first into the open air, so as to get the wood ripened before they are cut back; if maturity be not effected before cutting back takes place, they will not break either evenly or freely. Place them in the full sun in an open situation, but do not all at once withhold water, as that course stops further growth; no harm will, however, be done by letting the soil get dry enough to cause them to flag for a few hours; then give water, and when again dry let them go a little longer before applying any, and in this way, by degrees effect the ripening process of the wood, which in a few weeks will assume a hard brown colour, after which the shoots must be removed to within from three to half-a-dozen eyes of where they were headed back to the preceding year, according to the size of the specimens, allowing the greatest length of shoot to remain in the case of young plants which it is desirable to increase in size. Do not let them get saturated with wet during thunder-storms or continued rains. When there is an appearance of such occurrences lay them down on their sides. Plants that are wanted to be in flower some weeks longer should be well supplied with manure water, particularly if in small pots, and these very full of roots. What are called fancy kinds push their flowers almost all together, and after the general head of bloom is over they should be cut back; they must not, however, be cut in nearly so close or into the hard wood as the large flowering sorts, or the result will most likely be the loss of the plants; neither will it be well to expose them in the open air in the manner advised for the other kinds; a pit or cold frame after flowering will be the most suitable place for them, never subjecting them to such extreme drought as the large-flowered ones will bear. They are equally impatient of too much wet, which is generally the cause of their dying suddenly in a way which they often do.

Indoor Fruit Department.

Vines.—Look over lately inarched Vines and see that the ties are not interfering with the expansion of the wood; do not remove the matting entirely, although the union may seem complete, as the slightest pressure will cause a separation. It is a safe plan to put a single round of matting above and below the jointing, and let it remain all the season. Where Lady Downes are stoning and show the slightest indication to scald keep the interior of the Vinery in which they are as cool at all times as a greenhouse until the stoning process is over, and not 3 per cent. of the berries will be injured. This scalding, as it is termed, consists in the most prominent berries becoming soft and brown on one side, as if they had been burnt with a hot iron; sometimes a single berry here and there throughout the bunch is affected, and in more severe cases the whole side of the bunch is destroyed. Many a bunch which promised well to begin with has through this been reduced to almost nothing in a short time. A burning sunshine is the chief cause of the disease, for in dull sunless weather nothing of the kind takes place. When sufficient air cannot be admitted a temporary shading is often placed over the glass outside to keep down the temperature inside. Midsummer Grapes are colouring fast now, and an inch or two more opening may be left on the ventilators all night with advantage; on mild, wet, dull days the front ventilators should not be kept entirely shut. Be careful to keep the Vines from which all the fruit has been cut perfectly clean from every form of insect. The best eyes from which to raise next year's Vines are those selected from the earliest-ripened wood, and this fact in itself should be sufficient inducement to ensure attention.

Pits and Frames.—Cucumbers that have been bearing from the commencement of the season, and are now falling off a little, should have some of their shoots thinned out and a little fresh soil added to the surface of the bed. In this the shoots will strike root from the joints, where required, by pegging them down. If the plants be clear from insects thus treated, they will again push out growth and fruit freely.

Melons.—The late-planted crops will now be growing fast, and must receive every attention in thinning out superfluous shoots, stopping those retained as soon as they reach the sides of the frame; this will cause them to throw out bearing wood. Keep up the necessary warmth in the beds by slight linings; these will not require now to be so heavy as earlier in the season when the weather was cooler, but with late Melons in frames the beds must not be allowed to get cold, or the plants make little progress and the summer is too far advanced before the crop comes to maturity. As the preceding crops gradually ripen withhold water so as to impart the requisite flavour to the fruit, but do not let the soil become so dry as is sometimes done, and thus stop the full development of the fruit. Endeavour by the use of the syringe on such as are swelling off the crop to keep the foliage free from insects, for where the leaves are scanty and injured by red spider or other pests the fruit, as a natural consequence, will be small and deficient in flavour. Woodlice are a great nuisance where they exist in large numbers in Melon pits or frames, and before the fruit begins to ripen measures should be taken for their destruction. They are not at all particular as to their food, slices of raw or boiled Potatoes, or pieces of Apple placed in the bottom of a few small pots and covered with hay or Moss, will attract them in numbers, while by looking over them every morning and destroying they can be kept down so as to little inconvenience. It is only where such precautions are neglected during the advancing stages of the crop that woodlice exist in such numbers as to do serious mischief.

Kitchen Garden.

Late Peas.—As a means of retarding, in some measure, the last sowings of late Peas, so as to have them far on in the autumn, the points of the shoots may be nipped out at the spot where they show the first flower; this will induce them to throw out growths at the joints lower down, and it also makes them more bushy, as they will, thus treated, push two or three shoots in the place of one, and will delay their cropping from a fortnight to three weeks. As to the quantity produced by Peas so treated, it does not appear to have any influence either one way or the other. The greatest enemy late Peas have is mildew, for if this once makes its appearance their cropping powers are soon over. If, as advised at the time of sowing, the most open airy situations were selected for these late crops, and the rows were placed far apart, the chief measures for avoiding this troublesome parasite have been taken; but if they are ever allowed to want water, mildew is certain to follow. If, therefore, the weather be dry, give a copious watering once a week, so as thoroughly to soak their roots, and mulch the ground with half-rotten manure for 2 ft. on either side of the rows.

Turnips.—A good breadth of Turnips should now be sown, as, after this time, the beetle is not usually so destructive as earlier in the season. Ground that has been cleared of early Potatoes, Peas, or other crops will now be available for these. It will not be necessary to dig it previous to putting in the seed, unless it be of a very strong adhesive nature, nothing being gained by doing so; in fact, when the land is light it does absolute harm by inducing the growth of leaves rather than that of the bulb. Previous to sowing, hoe the ground 2 in. deep, rake off and remove any weeds that may exist, and sow the seeds in rows 1 ft. apart, putting in enough to allow for loss from the depredations of birds or the fly. Before sowing dress the seed with red lead; if this be properly done, according to the directions already given, it will secure them from molestation from all birds except the greenfinch, which seems to defy any dressing that can be given to seeds of the collective family of Brassicas. It is a well-known fact that seed-bearing severely taxes the energies of any plant, although all are not alike affected by it, but it is simply a waste of strength to allow anything to seed when the seed is useless or not required. For this reason Asparagus in private gardens should have the seeds stripped off as soon as they are large enough to take hold of. At first this may appear a tedious process, but a little practice will enable any one to clear a good breadth in a few hours. Do not allow them to get large or full grown before they are taken off, for, in that case, the injury they do is almost complete. Go over the beds frequently to remove all weeds, which, if allowed to grow so much, impoverish the soil, and this crop, more than most others, cannot bear this.

Planting Cottager's Kale.—A good space should now be planted with the useful Cottager's Kale, as this is a most excellent vegetable, and so hardy that it will stand even our severest winters. It is much better to have a good breadth of it than to grow several varieties of similar winter greens that are not equal to it in any way. Give the plants 20 in. space in the rows, and allow as much between each row.

Vegetable Marrows and Endive.—Thin out Vegetable Marrows sufficiently, not allowing them to get too much crowded, and if the situation be at all exposed, secure the shoots so that they will not be blown about by the wind. See that they are well supplied with water. Wanting this, the plants will not bear to the end of the season. Making a sowing of the Batavian Endive, and also of the Green Curled; these will come in as an autumn supply, as the plants from this sowing will not be so liable to run to seed as those sown earlier. Do not put the seed in too thickly, as nearly all of them vegetate and are not so liable as many to suffer from the ravages of birds or insects.

Extracts from my Diary.

July 15.—Sowing Snowball and American Strap-leaf Turnips. Putting in cuttings of Carnations and Pinks under hand-lights. Planting out Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbages for autumn use. Layering Strawberry runners, three in a bunch, on pieces of turf 6 in. square, for making new plantations. Stopping and nailing in Tomatoes. Looking over Cucumbers and Melons, stopping them, and earthing them up a little where required. Mulching late Peas and Beans with well-rotted manure.

July 16.—Sowing a little Chervil for autumn and winter use; also Mustard and Cress. Taking up and dividing a quantity of old Polyanthuses. Planting out Celery in trenches. Getting up early Potatoes and storing them away for seed. Dutch-hoeing among Gooseberries and Currants, and all other growing crops. Gathering Apricots for bottling. Giving Scarlet Runner Beans a good soaking of manure water. Taking the nets off Strawberries and putting them over Morello Cherries.

July 17.—Sowing Green Curled and Frazer's Broad-leaved Endive. Pricking off herbaceous Calceolarias; also Cinerarias and Primulas. Planting out the last rows of Cardoons. Picking off the dead flowers and nailing and tying in Roses on walls. Giving Peach and Nectarine trees a good soaking of water. Cutting herbs and placing them in an open shed to dry. Gathering Raspberries and Red Currants for preserving. Renovating the linings round Melon and Cucumber frames, and giving all Pear trees, where heavily laden with fruit, a good watering.

July 18.—Sowing Red and White Turnip Radishes. Putting in cuttings of different sorts of Pelargoniums. Clearing off a large piece of Peas; manuring the ground, and getting it dug up ready for other crops. Training out and pegging down bedding plants, and staking and tying in plants on borders. Stopping and nailing in the leading shoots of Peaches, Nectarines, and other wall fruit. Sticking Peas, and getting them earthed up. Watering the Pines all through, and putting stakes to any that require it.

July 19.—Sowing Canadian Wonder dwarf French Beans. Potting on Begonias, Palms, and Dracænas for table plants. Earthing up early Celery when the soil is dry and in workable condition. Clearing off a piece of Broad Beans, manuring the ground, and digging it in ridges on which to sow Winter Spinach. Stopping and pegging down Vegetable Marrows, and giving them a good soaking of manure water. Looking over Vineries, stopping laterals, and giving all late houses a good soaking with guano water.

July 20.—Sowing Spinach. Tying out and picking blooms off Fuchsias intended for exhibition. Thinning Turnips. Turning over manure for making new Mushroom beds. Watering Cauliflower, Celery, Lettuce, Endive, and Tomatoes. Drawing drills for Spinach, and well watering them previous to sowing. Giving Peaches and Nectarines a good washing every evening with the garden engine to keep down insects. Mowing and cleaning in the pleasure grounds, and rolling down all gravel and turf that require it. Fruit in use for dessert: Pines, Grapes, Melons, Peaches, Nectarines, Figs, Strawberries, Raspberries, and Cherries.—W. G. P., *Dorset*.

PLATE CXXXVI.

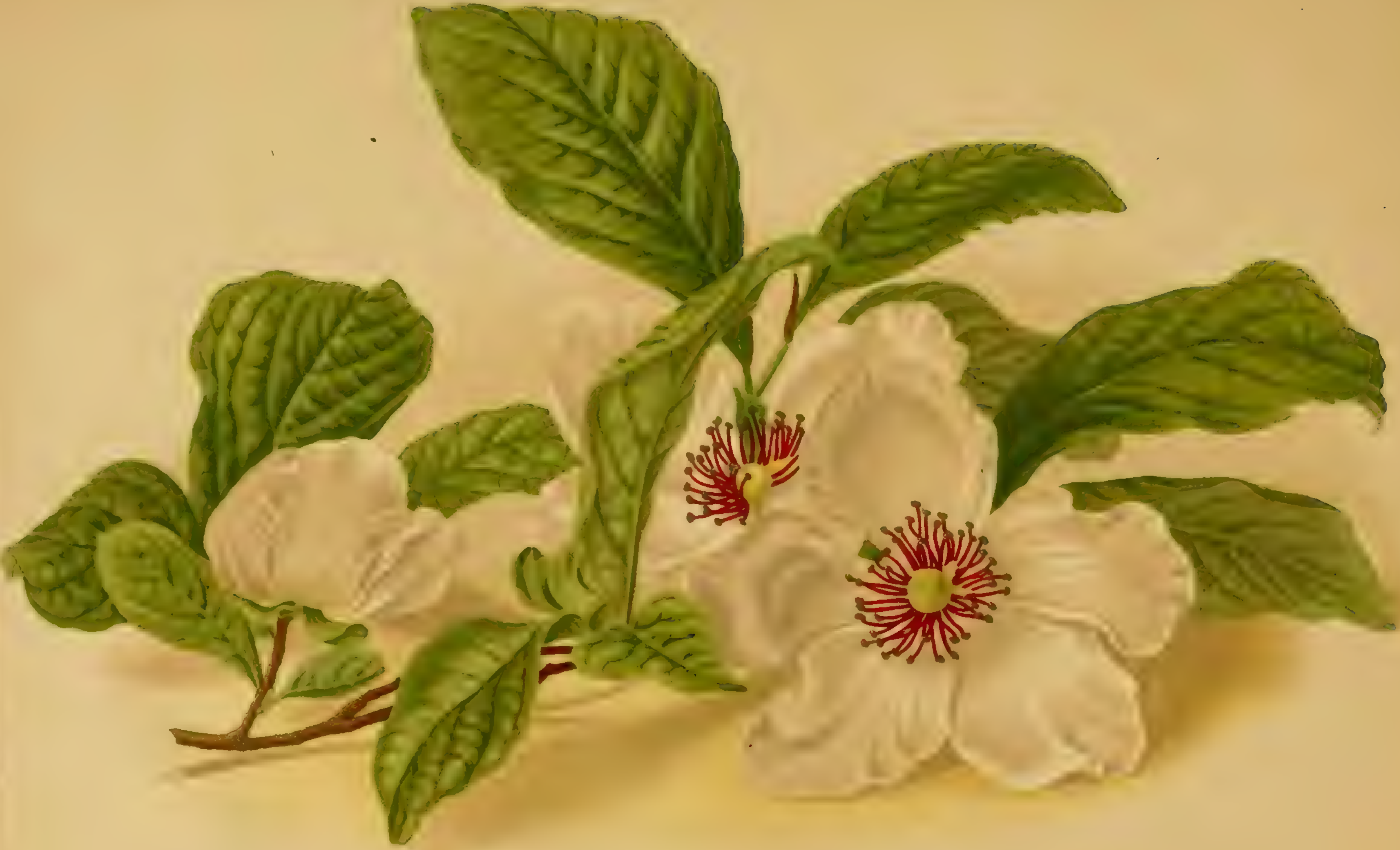
THE STUARTIAS.

(WITH A COLOURED FIGURE OF S. VIRGINICA.)

Drawn by MRS. DUFFIELD.

Flower-bud of Stuartia virginica.

Considering how few ornamental shrubs there are that produce their flowers in summer, it is not a little remarkable that any really good hardy species should be neglected. Yet how many gardeners or amateurs have heard of a Stuartia? much less seen a fine specimen in its full beauty, although two species were introduced during the last century. Like many other North American plants, they were not very generally dispersed in British gardens when first introduced; and during the last thirty years or more deciduous shrubs and trees have not received their due share of attention, in consequence of the great demand for evergreens. There are still, however, some gardens where the precious introductions of former owners are prized and carefully preserved. Notable amongst these is Syon House garden. The present duke is a great lover of trees and shrubs, and his gardener, Mr. Woodbridge, is very proud of the historical collection under his charge. At Syon one may see a Stuartia amongst the numerous rare species in the arboretum. About a year ago Mr. Woodbridge exhibited flowering specimens at South Kensington, and every one who saw them admired them. Now there is one species, at least, which deserves a place in every garden, no matter how unpretending its design. The genus Stuartia comprises four known species, two native of the Eastern States of North America and two of Japan. Only the American species have hitherto been introduced into Europe, but, judging from the dried specimens, one of the Japanese species is equally handsome as the North American. They are all deciduous shrubs with simple leaves, much like those of some species of Cerasus, and the flowers resemble those of a good single Camellia; in fact, there is more than an outward resemblance, for Stuartia and Camellia belong to the same Natural Order. The two North American species have been confused by some writers, but it is important to distinguish them, since one is rather hardier than the other. S. pentagyna (syn.—Malachodendron ovatum) is perhaps the hardier of the two. There is a coloured figure of it in Sir James Smith's "Exotic



AN AMERICAN SHRUB (STUARTIA VIRGINICA).

Botany," t. 110, which was prepared from a specimen grown at Kew. Smith says: "It has long been cultivated at Kew, where the late Mr. Aiton gave me specimens in 1785 from an old full-grown shrub." He also speaks of it as being exceedingly rare. It differs from its congener S. virginica in its larger, less hairy leaves, larger cream-coloured flowers, and especially in having five distinct styles in the flower, instead of only one, or rather of five consolidated into one. Its flowers, which are solitary in the axils of the leaves, are 3 in. or 4 in. across, and they are produced in great profusion during the months of July and August. The petals are cream-coloured inside, and tinged with red on the outside, and more or less jagged on the margin. This species is at home in the mountains of North Carolina and Tennessee, and thrives in any good garden soil. S. virginica, on the contrary, inhabits swamps and shady woods from the coast to near the foot of the mountains in the South-Eastern States, including Florida and Louisiana. I have seen no specimens from so far north as the State of Virginia. The flowers of this species are also very showy, the petals being pure white and the stamens purple; but it does not flower so freely as the other. It is figured in Andrews' "Botanists' Repository," t. 397, under the name of Stewartia marilandica.

W. B. Hemsley.

[The specimens from which our plate was prepared were supplied from the gardens at Syon House.]

PROPAGATING.

Perennial Phloxes.—There are several ways by which these may be increased, viz., by division, cuttings, and roots. For spring propagation the plants must be got into an intermediate house, the temperature of which is about 55° in February, when they will soon begin to grow and produce fine, soft cuttings. Take well-drained pots, fill them with fine soil, consisting of loam, leaf-mould, and sand, putting ½ in. of sand on the top; give a sprinkling of water, and make the cuttings as shown in fig. 1 or fig. 2, cutting off the bottom leaves and leaving the buds; insert the cuttings up to the leaves, water them, and place them in a gentle bottom-heat; they will, however, do equally well in the box in the propagating house, or in a bed of fermenting material, taking care to let off all excess of moisture by opening the glasses every morning; if on a manure bed, a little air given at the back part of the frame will be beneficial. Cuttings may also be taken off in autumn; the best way is to put them in single pots on a spent manure bed; they will emit roots in three weeks or so, when they may be put on a shelf in a cold greenhouse to winter; they may lose their tops, but they must not be thrown away, as in spring they will shoot up from the bottom and make early strong plants. In order to increase them by means of division and roots, take up the plants intended for that purpose in September, cut off all the roots that are not wanted (there are a great many more in the case of some varieties than in that of others), cut up the plants according to their strength, pot them, and place them in a cool, close frame. The roots must be cut up into pieces about 1½ in. long, and laid in rows flat in pots or pans well drained and filled with rather sandy soil, with ½ in. of covering of the same over the top; give a good watering, and place them on a shelf near the light. After they begin to grow, which some sorts will do quickly, they should be carefully watered during winter, and should be potted off in February and afterwards kept in the greenhouse a short time till they have become established. H. H.

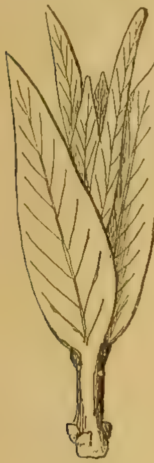


Fig. 1.

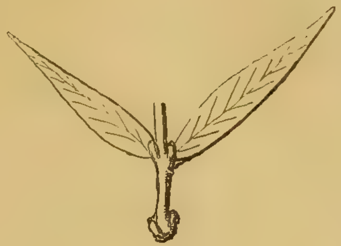


Fig. 2.

THE FRUIT CROPS.

METROPOLITAN AND SOUTH-EASTERN DIVISION.

Southgate.—Peaches and Nectarines on open walls in this neighbourhood are generally bearing good crops where they received ordinary protection whilst they were in bloom, although just in the midst of their flowering we had two or three nights with from 12° to 14° of frost. Apricots also in most places are a full crop. Apples set freely, but a great many have fallen off, and they will not be near so plentiful as at one time seemed likely; the most constant-bearing kinds, such as Lord Suffield, Keswick Codlin, Hawthornden, New and Old, King of the Pippins, Blenheim Pippin, Wellington, Manks Codlin, and Cox's Orange Pippin, are carrying the best crops. Pears are in most places below the average. Plums abundant generally. Strawberries plentiful. Cherries fair, but not heavy. Raspberries and Currants a full crop. Gooseberries mostly very thin Nuts, both Cobs and Filberts, next to none. Walnuts the same.—T. Baines.

Syon House, Brentford.—Apricots in the gardens here are a good crop. They were covered with frigi-domo in spring, but in some places there is an equally good crop where they had no covering whatever. Peaches and Nectarines a good crop where protected with double net in the spring. Cherries at one time were most promising, but many dropped at stoning time, and since then all the tender-fleshed kinds, such as Governor Wood, have suffered severely from the scorching heat of the sun; Bigarreaus have withstood the sun heat best. Apples and Pears are very thin; the former were very promising at one time, but a great many dropped just as they began to swell. Plums are also rather thin, although in some places about here there are good crops. Red, White, and Black Currants, and also Raspberries, are abundant; but Gooseberries are very scarce, except where they are grown in sheltered situations. Strawberries are very abundant, especially Keen's Seedling, Garibaldi, or Vicomtesse Héricart de Thury, President, Sir J. Paxton, Sir Harry, Oxonian, and Elton Pine.—J. Woodbridge.

Gunnersbury Park, Acton.—Apples in our own orchard, sheltered from the north and north-east by a belt of trees, are a good crop, but on trees fully exposed the crop is light. The most trustworthy kinds in the market gardens in this district are King of the Pippins, Stone Pippin, Lord Suffield, and Duchess of Oldenburg. The trees have suffered much from blight. Pears are a light crop. The most fruitful are Hessle, Comte de Lamy, and Hacon's Incomparable. Our soil, a good loam resting on light clay, is favourable to the growth of Apples and Pears. Stone fruits in general are a failure. Of Apricots we grow none. Peaches and Nectarines, protected with frigi-domo, are a light crop. Much of the fruit fell through imperfect setting, caused by the long continuance of wet, sunless weather in spring. Plums, with the exception of Victoria, are a complete failure. Cherries are a moderate crop; Elton on an east wall and Morello on standards are good. Bush fruit is a fair crop; the lightest are Gooseberries and Raspberries. Amongst Strawberries I have seen heavy crops of fine fruit in this neighbourhood, but, like all other kinds of fruit ripened up to the present time, they are deficient in flavour.—J. Roberts.

High Grove, Pinner.—Fruit crops in this district have suffered greatly from the heavy rainfall and want of sun. The soil of this neighbourhood consists of deep loam on the London clay, the high lands being gravel and sand. Apples and Plums grow very luxuriantly with us. Apricots are scarce. Apples in many places are almost a failure, though we had the finest show of fruit this season which I have seen for years. Pears are plentiful, most varieties fruiting this season, and free in most places from blight. Peaches and Nectarines are a fair crop in most places. Plums partial; good on walls; the Victoria, Prince of Wales, and Orleans are the best general croppers.

Gooseberries are very scarce. Currants are a fair crop. Strawberries good, but suffered greatly from too much rain. Orchards hereabouts are generally planted with Plums and Apples, small fruits not being largely grown. Raspberries are, however, plentiful, and Fastolf is one of the best for bearing heavy crops. The best Apples in this neighbourhood are Golden Pippin, Court Pendu Plât, Cox's Orange Pippin, Lord Suffield, Yorkshire Greening, and French Crab; the sorts generally grown in orchards are Wellington and Blenheim. Of Pears we grow the Crassane, Marie Louise (on standards and walls), Easter Beurré, Glou Morceau, Williams' Bon Chrétien, and Jargonelle; but the two latter do not fruit freely with us. I may add that Potatoes as yet show no sign of disease.—G. BRUSH.

Weirton House, Maidstone.—In this neighbourhood, as in many others, the fruit crop is very unsatisfactory, and must come very short of what was expected. The trees, which were, while in blossom, objects of great beauty, are now much disfigured by maggot and other insects. Many young trees, which were healthy last year, are looking half dead; some plantations are better, but few are in a healthy condition. Cherries of all kinds are very thin. Pears the same. Plums are better, but still a light crop; some of the principal kinds in bearing are Early Orleans, Prince of Wales, Royal Dauphine, Damsons, and La Delicieuse; the last, a fine old late market Plum for kitchen purposes, deserves to be more grown than it is. Apples are unhealthy, and the crop will be a short one. Currants are thin, except Reds, which are a fair crop. Gooseberries are fewer than they have been for many years past. In the garden here we have plenty of Peaches and Nectarines where coping boards and netting are used, but on other walls only protected by evergreens they are very thin. Gooseberries are not a quarter of a crop, the best bearers being the large Lancashire kinds. Strawberries of all kinds are abundant. We are well sheltered by timber trees, and the gardens slope to the south, the soil being a sharp loam on the Kentish ragstone. On the night of July 3 the thermometer fell to 37°, the highest point the next day being 68°, with a scorching sun.—W. DIVERS.

The Deepdene, Dorking.—Fruit crops here this year are very varied; as regards quantity we have very heavy crops, others very light ones. Apricots, Plums, and Cherries are most abundant; also Currants and Raspberries; but Apples and Pears are thin. There is not one well-cropped Apple tree in the garden, though the bloom was very abundant, but we had a fine crop last year, and we can scarcely expect much this. Marie Louise Pear and Beurré d'Amanlis are the only two varieties that are carrying a crop. We had very little bloom, owing to the very cold, wet season last year. Peaches and Nectarines are very thin, but the trees look healthy. Gooseberries are a medium crop; a large number dropped off from the effects of sharp frosts which we had in the end of March. Strawberries are a fair crop, but have been hitherto very deficient in flavour. Figs in some places round here are a most abundant crop. Nuts, both Cobs and Walnuts, are very scarce as far as I have seen. Hardy Grapes on walls are showing well for a crop, but mildew has been very troublesome during the past two seasons. Our Apricots were in full bloom during the very severe frost which occurred in the end of March, but they were well protected with a good thick canvas, and the result is a very plentiful crop. I have never found herring nets to be of the slightest use when the frost was more than 6° or 7°.—JOHN BURNETT.

Tunstall, Sittingbourne.—This year commenced with great promise as to fruit, but the result has proved disappointing with almost every kind. Plums stand first as to crop, but I understand this only applies to certain districts; the Victoria and Prince of Wales are both bearing heavily hereabouts. Cherries have suffered much from late spring frosts and are not above a quarter of a crop; the Bigarreau and English have done the best. There are a few common sorts of Pears, but all the best sorts are again very short. Apples are a very partial crop, bearing fairly at some places, but at others very short. All kinds of bush fruits are short and scarce, except Red Currants, which are good. Wall fruit is again very thin; indeed, almost a failure.—G. WEBB.

Sulhamstead, Reading.—On looking over my orchards and gardens I find I am not equal in quantity of fruit to what I was last year, though in regard to Apples I have got the lion's share, and the "tottle of the whole" in this district will not amount to more than one-fourth of a crop, and Pears less. I have read various theories for this deficiency after so favourable an exemption from spring frosts. I think that the severe north-east winds, late frosts, and blight of last spring (viz., of 1877), which so thoroughly emaciated the first foliage, so weakened the buds that sufficient stamina was not attained to perfect the blossom-buds for this year. My trees blossomed profusely, but they looked pale and delicate, and the stalks were more slender than I ever remember to have seen them before. Of the Plum tribe I have plenty, though too frequently as I go about I see trees fruitless. Two-thirds of a crop will be about the result. Upon walls that I have seen Plums are a full crop, particularly where protection was given. Pears, Apricots, Peaches, and Nectarines may be considered as a good sprinkling, and that is all. Figs are scarce, Quinces good, and Mulberries abundant. I fear much complaining will result as regards the paucity of Filberts, and even common Nuts. My Walnut trees will produce me about half a crop, and ten trees of my neighbour's, about a mile off, will produce two Walnuts, according to my scrutiny. Walnuts and Filberts are certainly scarce. Of the smaller fruits, Gooseberries are partial, Currants plentiful, Raspberries enormous, and Strawberries bountiful, though not rich as regards flavour. I hear complainings about the Potato disease, chiefly in gardens, amongst the American sorts, which, from their exuberant foliage, are invariably planted too thickly, and in a dripping time are the first to suffer in consequence. I have the usual curl amongst the American varieties, but in my rather extensive plantations of English sorts I am glad to say I have no complaint of either curl or Peronospora at present.—ROBERT FENN.

Heckfield, Hants.—Apples set their fruit apparently vigorously and then disappeared, but through what cause I am quite in the dark; there may, perhaps, be a quarter of a crop; on some few trees half a crop, the best being Hawthornden, Keswick Codlin, Blenheim Pippin, Lord Suffield, and Northern Greening. Pears may average half a crop; on walls they are very good, the most prolific being Seckle, Marie Louise, Duchesse de Angoulême, Beurré Hardy, Ne Plus Meuris, Althorp Crassane, and Glou Morceau. Peaches and Nectarines are a heavy crop, and the trees are growing vigorously. They were all protected with scrim canvas. On several nights when they were in bloom we registered 6° and 8° degrees of frost, and the wind was continuously blowing from the north-east, thus creating a dry atmosphere and saving the blossoms from frost. Apricots are also a very full crop, and promise to be large; they were protected similarly to the Peaches; indeed, such is the severity of our spring seasons that it is now quite useless to expect fruit without artificial protection. Gooseberries suffered terribly through frost when in flower, and are very thin—scarcely a third of a crop. Morello Cherries blossomed after the sharpest frosts were over, and are a full average crop; the earlier kinds are scarce. Plums are partial; some kinds are bearing prodigiously, notably Diamond, Victoria, Jefferson, Orleans, and Belgian Purple; other sorts are thin. None were protected. Currants and Raspberries are a fair average crop, and Strawberries very heavy; I never before saw them so good; the favourite sorts are Vicomtesse Héricart de Thury and President. Potatoes are very fine, and as yet there are no signs of disease. The soil of this district is sandy loam, the substratum being gravel and sand.—W. WILDSMITH.

Eaglehurst, Fawley, South Hants.—Apples in this district are a very light crop. Although there was a good show of bloom, the young fruits dropped after setting. Blenheim Orange, Beauty of Kent, Ribston Pippin, King of the Pippins, Newtown Pippin, Profit, Hawthornden, and Alfriston are the best bearers. Of Apricots we have scarcely any, except a few on the Moorpark and Hemskirk. Cherries are a thin crop with the exception of Morellos, which are very good. Of Pears we have scarcely any. Beurré d'Amanlis, Beurré Diel, Jargonelles, William's Bon Chrétien, Glou Morceau, and Louise Bonne are bearing a few scattered fruits. Of Peaches we have none, but Nectarines are a fair crop, the Elruge and Violet Hâtive being the best. Plums are abundant, but the trees very much blighted. Jefferson, Victoria, White Magnum Bonum, Early Orleans, Reine Claude de Bavay are the best. Figs, both on walls and standards, are a heavy crop. Raspberries a full crop and fine in quality. Bush fruits abundant and clear of blight. Strawberries are a very heavy crop, but deficient in flavour, owing, doubtless, to the wet, dull, and sunless weather which we have had. Our soil is of a light, black character, from 2 ft. to 4 ft. deep, resting on a gravelly sub-soil, and requiring in the summer time a good shower of rain every week to keep crops growing. I may mention that the Potato crop is good, but the disease is very prevalent in this quarter.—W. WATSON.

Welford Park, Newbury.—Fruit crops in this neighbourhood are not going to turn out so well as was expected earlier in the season. Apples will not be so plentiful as they were last year; there was abundance of bloom, and most of the sorts set pretty well, but more than three-fourths of the fruit have dropped off; many of the trees, both young and old, look as if they had been scorched, and some of the branches are quite dead. A few sorts are bearing an average crop and the trees are healthy, viz., Keswick Codlin, Ecklinville, Northern Greening, Lewis's Incomparable, Sturmer Pippin, and Cornish Aromatic. Of Pears we have but one-third of a crop; the best are Josephine de Malines, Marie Louise, and Beurré Rance. Cherries are an average crop; May Dukes are most abundant, but many of the Morellos have dropped, and the result will be a light crop. Plums an average on walls, but very few on standards. Apricots are quite a failure. Figs a light crop, but likely to be good in quality. Peaches and Nectarines will be about half a crop; none of the trees have had any protection this year. Strawberries are abundant and good. Currants, Gooseberries, and Raspberries are fair average crops.—Charles Ross.

Royal Gardens, Windsor.—The fruit crop here and in this neighbourhood is a very good one, more especially Apricots, Peaches, Nectarines, and Plums. These are plentiful, and promise to be excellent in quality. The trees were covered with canvas every cold night from the end of January to the beginning of June. Cherries are above the average both on walls and standards; Morellos especially are most abundant. Strawberries are a good average crop; some varieties, such as Late Pine, Aromatic, Vicomtesse Héricart de Thury, Mr. Radclyffe, La Grosse Sucrée, and Fairy Queen, are bearing heavily; but other varieties, such as Keen's Seedling, Sir Joseph Paxton, Unser Fritz, and Cockscomb, are thin, and many of the plants "blind." Pears are below the average; the trees generally were thin of bloom; the fruit, however, promises to be excellent in quality, and at present free from spots. Walnuts are about an average crop; but Filberts are thin. Plums on standard trees are everywhere most plentiful; also all kinds of bush fruits. Taking the Apple crop as a whole, I may say that it is about an average one here. Blenheims are thin; also the Wellingtons; but Rosemary Russet, Scarlet Russet, Downton Nonpareil, Cox's Pomona, King of the Pippins, Cockle Pippin, Frogmore Prolific, and others are bearing heavy crops. Near here Apples in places are very thin, a circumstance probably owing to the cold, damp, and shady weather which we experienced towards the end of May and beginning of June. From May 21 to May 26 the day temperature ranged from 34° to 40° with a cold north and east wind. All Apples set well, and the dropping of the fruit I attribute to the above-named cause.—T. Jones.

SOUTH MIDLAND DIVISION.

Wycombe Abbey.—Apricots are a full average crop, and appear as if they would be early in ripening and good. Apples an average crop. Cherries under the average, and white kinds, which have not been protected from the effects of rain, are cracking. Morellos much above the average, and promise to be fine. Currants of all kinds a full average crop. Gooseberries very much below the average, all the earliest being cut off by frost. Nuts below the average. Plums a full average crop and fine. Pears under the average. Peaches and Nectarines average. Raspberries full average. Strawberries over the average and very fine. Walnuts under the average. Cherries abound in this neighbourhood, but some varieties of these are but partial crops, and such is the case with Apples. In some places Pears are remarkably scarce. Amongst Plums, Victorias are bearing the greatest crop, and Gooseberries are plentiful on the higher land.—G. T. Miles.

Dropmore, Maidenhead.—The soil about here is mostly gravelly, and, in most cases, pretty much sheltered by hedgerow timber, such as Elm and Beech, where orchards are formed. There was a fine show of blossom of almost every kind of fruit, but the heavy rainfall and the continuance of an easterly cutting wind caused it to fall off after one might have thought it to be quite safe. Wall fruits fell very much. Apricots set well with me under a covering of Russian mats, and a good crop is the result; but a great many fell off when about the size of marbles, and I hear that this shedding of fruit has occurred in other localities.—Philip Frost.

Burnham, Bucks.—Apples here are a fair crop. Pears very thin. Plums and Cherries middling. Strawberries and Raspberries a good crop. Currants a fair crop. Gooseberries very thin. Walnuts middling. Peaches and Nectarines pretty good. Apricots a fair crop. Nuts and Damsons, thin.—J. Clilvird.

Great Tew, Enstone.—Owing to the cold rains which we have had Apples are very scarce, Pears are about half a crop, Plums and Cherries about two-thirds. Of Apricots, Peaches, and Nectarines we have very few. Gooseberries are about two-thirds of a crop. Raspberries, and Black, Red, and White Currants are full crops, and the same may be said of Strawberries. The orchard house is our only reliable place for crops of Apricots, Peaches, and Nectarines, and here, as usual, they are most satisfactory. This is now the eleventh summer of its existence, and every year has been the same—no disappointment; and, as regards the trees in pots, they are as fruitful and healthy as at first.—A. Macfarlane.

Blenheim, Woodstock.—We had a profusion of bloom on all our fruit trees; but, nevertheless, with a few exceptions, we have not more than the tithe of a crop. There are scarcely any Apricots, the only exception being where the trees were thoroughly well protected. Apples are but little better; the most certain bearer is Stirling Castle, young pyramidal trees of which carry good crops, whilst standards of Blenheim Pippin and Wellington (the best of all cooking Apples) have scarcely a fruit on them this year. Pears also are very partial, Marie Louise, Louise Bonne, and Beurré Rance being the best bearers. I attribute our failure to the buds being frozen through in their embryo state, the unusually mild weather previous to April 1 having brought them to such a forward and tender condition as to be quite unable to repeatedly withstand 15° and 16° of frost. To this must be added the late immature growth of last season. Cherries and Plums of all kinds are good, especially Damsons, which threaten to break down the trees with the weight of the fruit. Strawberries are also a very heavy crop and good in quality, Sir Joseph Paxton being one of the best for main outdoor purposes, and gradually ousting President. British Queen and Sir C. Napier do not do so well on our limestone. Bush fruits, with the exception of Raspberries, are up to the average. Walnuts are a fair crop. Filberts and Cobs thin. The Potato disease is making its appearance.—William Crump.

Castle Ashby.—The fruit crops in this neighbourhood are very unsatisfactory generally. Here we have a few dozen Apricots, and a small crop of Peaches, Nectarines, and Pears. Upon wall trees a medium crop of Plums and Morellos; on standards a small crop of Plums. Very few Apples or Pears; on pyramidal-trained Pear trees very few; on horizontally-trained Apple trees the same. Strawberries are plentiful, but the flavour is inferior; too much rain for them in the early part of the season. Raspberries are a medium crop, but late in ripening, a remark which applies to all kinds of outdoor fruit, judging by the appearance of what has to ripen and what we have now harvested. Red Currants are a moderate crop, bunches small, having been injured by rain and wind. Of Gooseberries we have very few; I never remember less. Black Currants plentiful and good. Very few Walnuts; a few Cob and Filberts. Mulberries promise to be good.—G. Beech.

Ramsey Abbey, Hunts.—In this immediate neighbourhood there will, I think, taking all things together, be an average crop of fruit. Apples are good, so are Plums, Cherries, and Peaches. Pears and Apricots, with a few exceptions, are rather thin. Strawberries and Raspberries are fine. Gooseberries are thinner than usual, but the size of the fruit is much above the average. Currants (Black, Red, and White) are good crops. Figs and Grapes are promising; the latter quite free from mildew. Nuts of all kinds are very thin indeed. Our soil is a rather heavy loam on Oxford clay, interspersed with occasional beds of gravel. It is adhesive in winter, but dries rapidly in summer, and often cracks into deep fissures. We are well sheltered from the east, but much exposed to north and west winds, the latter being often violent. The following are the names of some of the best kinds of fruits in this district: Apples—Wellington, Lord Suffield, all the Codlins, King of the Pippins, Blenheim Orange, Juneating (Red and White), Royal Pearmain, Red Quarrenden, Scarlet Pearmain, Old Royal Russet, Bess Pool, Ribston Pippin, Waltham Abbey Seedling, Fearn's Pippin, Hawthornden, Sturmer Pippin, Yellow Ingestre, Scarlet Nonpareil. Pears—Autumn Bergamot, Glou Moreeau, Beurré Bosc, B. de Capiaumont, B. Diel, B. Rance, B. Superfin, B. d'Aremberg, Duchesse d'Angoulême, Jargonelle, Bon Chrétien (Williams'), Louise Bonne of Jersey, Marie Louise, Winter Nelis, Swan's Egg, Seckle, Hessel, Passe Colmar, Ne Plus Meuris, Vicar of Winkfield, and Easter Beurré. Plums—Victoria, Diamond, Early Prolific, Goliath, Pond's Seedling, Prince of Wales, Damson Green Gage, Transparent Gage, Kirke's, Coe's Golden Drop, Jefferson, Reine Claude de Bavay, and Washington. Peaches—Noblesse, Grosse Mignonne, Royal George, Prince of Wales, Barrington, and Walburton Admirable. Nectarines—Downton, Elruge, Pine-apple, and Pitmaston Orange. Apricots—Moorpark and Hemskirk. Strawberries—Keen's Seedling, Vicomtesse Héricart de Thury, British Queen, Dr. Hogg, President, Sir C. Napier, Elton Pine, and Red Alpine.—E. Hobday.

WEST MIDLAND DISTRICT.

Madresfield Court, Great Malvern.—Fruit generally, though much more abundant than last year, is extremely partial. In some orchards crops are heavy, while in others, more especially in the case of Apples, they are suffering severely from blight, and much of the fruit, where set, has fallen off. In fact, more fruit falls this season than has been the case for some years. This is, I think, principally owing to the heavy rains and sunless days which occurred during May and the first half of June. Here espalier and pyramid Apples are producing fine crops. Amongst the best bearers are Lord Suffield, Golden Spire, Hawthornden, Stirling Castle, Golden Noble, Warner's King, Cox's Pomona, and Lord Grosvenor. The latter will be a great favourite when better known, being an enormous bearer and similar in growth and appearance to Lord Suffield. Pears are generally a light crop, many of the trees producing but little bloom. Plums are generally good, the hardier kinds on standards and pyramids being heavily laden; choicer kinds on walls are only a moderate crop. Apricots in some places, and especially against dwelling houses, are a good crop, but they suffered so severely on cold walls last season that many of the trees, where not killed, were seriously injured, and are this season barren. The same remarks apply to Peaches and Nectarines; here we had a full crop of fine fruit last year, and the crop is equally satisfactory this season. Of Peaches, our best varieties are Crawford's Early, Violette Hâtive, Barrington, Bellegarde, Late Admirable, and Walburton Admirable. Of Nectarines, Elruge, Oldenburg, Downton, Murray, Pitmaston Orange, and Victoria. These afford a good succession in the order in which they are named. Where climate and soil are suitable, Walburton Admirable Peach and Victoria Nectarine are especially valuable, prolonging the season of gathering well into October. Of bush fruits, Currants and Raspberries are a fair crop. Gooseberries are a heavy crop here, but not generally. Strawberries bloomed well, but we have had too much dull wet weather for some kinds; the best this season are Sir Charles Napier, La Constante, Sir Joseph Paxton, British Queen, and Oxonian; the latter we grow extensively, finding it most valuable for late use, as, by trussing up and netting, it can be had until the middle of August. Potatoes are at present looking remarkably well; some few instances of disease have occurred, but the present fine hot weather will, I trust, keep it in check.—William Cox.

Witley Court, near Stourport.—Fruit crops in this district are again most unsatisfactory, and in some respects inferior to those of last season. Plums and Apples in some instances carry heavy crops, but this is by no means general. The great profusion of blossom gave every prospect of an abundant fruit crop, which was somewhat remarkable, as the autumn was sunless, wet, and cold, and by no means congenial to the maturing of the wood. The failure this year is doubtless attributable to the severe frosts which we experienced in April and May. Apricots are a failure generally. Plums partial; under average; we have a famous crop upon walls where protected. Cherries very partial—half a crop—and of inferior quality; trees much blighted; Morellos and Kentish heavily cropped. Peaches and Nectarines half a crop; trees healthy, protected by two folds of 1-in. mesh netting. Apples generally scarce; in low-lying situations they appear to have suffered most; trees much blighted. Amongst varieties bearing generally full crops may be named King of the Pippins, Lord Suffield, Keswick Codlin, that excellent kitchen Apple Ecklinville Seedling, Dutch Mignonne, Normanton Wonder, Yorkshire Greening, and Tower of Glamis; Striped Beefing, one of the most certain and best of our cooking Apples, is also bearing a good crop, as are also Hawthornden (new), Northern Greening, Golden Winter Pearmain, and Sturmer Pippin. Cider fruits are also partial and scarce. Of Pears we have very few upon walls or standards; small fruits are of inferior quality, and the trees are much blighted. Gooseberries are a very light crop. Black Currants an average crop—fruit small. Currants are light, and Raspberries are under the average. Filberts are very thin, and Walnuts are a failure. Mulberries abundant. Strawberries are under an average, and inferior both in size and quality; on President there is the best crop; Vicomtesse Héricart de Thury and Dr. Hogg are bearing moderate crops. Potatoes in several instances show signs of disease; otherwise the crops are promising.—G. Westland.

Westwood Park, Droitwich.—As far as the gardens here are concerned the account I have to give is satisfactory. Gooseberries are a fair crop. Currants very fine. Strawberries excellent, President and Carolina superba being very fine, Garibaldi and La Grosse Sucrée not quite so good; Keen's Seedlings are a good crop, but after the first gathering the fruit is small. Plums are a heavy crop, though some say that during the past week one-half has withered and fallen off. We have well-laden trees of Early Favourite, Victoria, Kirke's, Green Gage, Peach, Jefferson, and Golden Drop. Morello Cherries are a full crop. Of Pears most of the trees here are bearing a good crop; a large tree of Duchesse d'Angoulême bloomed and set well, but every one fell off in the first week after setting. On the Jargonelle there is a good crop, on Bon Chrétien an extra good one. We have fine fruit on young trees of Pitmaston Duchesse Souvenir du Congrès, Beurré Superfin, Knight's Monarch, and Glou Morceau; on walls Beurré de Capiaumont, Glou Morceau, Beurré Diel, Swan's Egg, Brown Beurré, Beurré Rance, and Crassane are thick; on large bushes Gansel's Bergamot, Albertine, and Goubalt are a good crop; on espaliers Marie Louise, St. Germain, Louise Bonne of Jersey, and Vicar of Winkfield are carrying good crops. Apricots are a fair crop under glass copings, those unprotected being destitute of fruit. Most of the Peach trees that were worth it have had a cheap glass roof erected over them 11 ft. wide, with trees planted in the front, and a flow and return pipe added. In this way we have secured a good crop, and the trees will soon pay for it by bearing crops annually. Another lot of trees has been grubbed up and twenty new ones planted in a new border; these will be covered with an inexpensive wide glass coping. As to Apples, Cellini never has been without a crop anywhere that I have seen it, and here we have grand crops of it. It is a variety which every one should grow. A small tree of Worcester Pearmain is bearing a good crop; Red Astrachan is loaded with fruit, also Prince's Pippin, Emperor Alexander, Lord Suffield, Stirling Castle, Keswick Codlin, and Blenheim Orange. In the orchards round here Plums and Damsons are good crops, but Pears are partial. A neighbour with large orchards has only a few Apple trees bearing anything like a crop, and they are Tom Putt. There is a local kind grown here called Chulley Kernel, and by some Chulley Pippin, a great favourite. It is a medium-sized, handsome, high-coloured variety, and bears a full crop almost everywhere. Cider fruit is but partial; in some places next to none.—John Gough.

Ashton Court, Bristol.—Apples and Pears here are under the average, both in orchards and gardens. The following kinds are bearing the best crops: Apples—Lord Burghley, Lord Suffield, Cellini, Dutch Mignonne, Hawthornden, Fearn's Pippin, Bedfordshire Foundling, Golden Winter Pearmain. Pears—Beurré Diel, Althorp Crassane, Huyshe's Victoria, Beurré Sterckmans, Thompson's, Williams' Duchesse de Angoulême. Of Peaches and Nectarines, there are good crops, whilst Apricots, Plums, and Cherries are much under the average. Strawberries are plentiful; so are also bush fruits, with the exception of Gooseberries. Nuts of all kinds are very thin. I attribute the generally light crops of fruit more to the effect of the cold drenching rains which we experienced throughout the greater part of the spring than to the influence of frost.—John Austen.

Alton Towers, Cheadle, Stoke-on-Trent.—Fruit crops in general here are very good. Strawberries, Gooseberries, and Currants are plentiful, but small. Damsons, Plums, and Apples are all excellent. Pears are not very good, and Apricots are a poor crop. Peaches are an average crop. The Potato crop is excellent, and I have seen no disease yet. We have suffered very much from rain on heavy soils thus far north.—T. Rabone.

Drayton Manor, Tamworth.—Speaking generally, I am sorry to report that the fruit crops in this district are very light indeed. Pears are under half a crop, but the following are bearing fair crops on walls, viz.—Barronne de Mello, Beurré d'Amanlis, Beurré Diel, Brown Beurré, and Glou Morceau; on espaliers and pyramids—Beurré Clairgeau, Aston Town, Seckle, and Williams' Bon Chrétien. Apples are about half a crop, excepting the following, which are bearing heavily, viz.—Lord Suffield, Keswick Codlin, Manks Codlin, Hawthornden (new and old), Cat's-head, and Cellini; the following are bearing medium crops, viz.—King of the Pippins, Ribston Pippin, Cox's Orange Pippin, Red Astrachan, Blenheim Orange, and Court Pendu Plât. Apricots are under half a crop; the Royal is the surest cropper with us—these were well protected in spring. Damsons are quite a failure. Denyer's Victoria Plums are bearing heavy crops as standards, and the following are fair on walls, viz., Cox's Golden Drop, Kirk's, and Reine Claude de Bavay. Plums generally are light. Raspberries are very good. Of Strawberries we never had better crops, especially from forced plants planted out last July; our best varieties are President, Sir Charles Napier, Keen's Seedling, Vicomtesse Héricart de Thury, and Dr. Hogg; for cropping and general excellence I consider President the best Strawberry grown. Gooseberries are a light crop; so also are Black Currants. Red and White Currants are good crops. Apricots are the only trees protected with us. Our soil here is light, resting on gravel, and, being situated rather low, and surrounded by water, we are very subject to spring frosts; but, in my opinion, frosts have not had much to do with the fruit failure this year; it is rather to be attributed mainly to last year's wood being imperfectly ripened, in consequence of the wretchedly wet and sunless season which we had. There were plenty of blossoms on all trees this spring (excepting Pears), with a promise of abundant crops, but no sooner had the fruit formed than most of it dropped; especially was this the case with Apples and Pears. I observe that many of the bush and pyramid trees are bearing heavier crops on the south and south-west sides this year than usual, which seems to me to point to the same fact, namely, better-ripened wood on the south side.—Owen Thomas.

Tortworth Court, Gloucester.—The Apple and Pear crops in this district is much below the average. Although the bloom was very abundant and at one time very promising, it set badly and dropped off. Late fruits are by far the best. Peach and Nectarine crops, protected only with old fishing nets, are abundant. Of Apricots we have very few. Plums on walls and standards are abundant. Of Cherries we have a full crop. Gooseberries and Currants are also good. Strawberries excellent. Nut trees here produced but few catkins, and the crop will be a light one.—Thos. Shingles.

Eastnor Castle, Ledbury.—After last year's failure, a dry, mild winter seemed to favour all kinds of fruit trees, which, Pears excepted, were laden with blossom-buds, but the severe frosts which we had in May greatly injured stone fruits, and the incessant downpour of rain damaged the Apple blossoms. The consequence is we have in this district what may be termed a partial fruit year. Apricots are a fair half crop; the trees very free from grub. Apples in favoured situations are plentiful and promising, while in low, cold soils they are in many cases a complete failure. Hawthornden, Keswick Codlin, and a kind known here as Izard's Kernel are fruiting well. The finer kinds, such as Ribston, Cox's Blenheim, and other Pippins, are very shy. Pears on walls, where there was blossom, seem to have set well. Marie Louise, Pitmaston Duchess, Knight's Monarch, Beurré d'Amanlis, and Duchesse d'Angoulême are carrying good crops. Cherries set well, but most of them fell off the trees. Bigarreau, Napoleon, Governor Wood, and May Duke are fairly good. Morellos on north walls are unsatisfactory. Plums are more plentiful than was at one time anticipated. Gisborne's Early Prolific, White Magnum Bonum, and Victoria are plentiful on bushes and standards. Coe's Golden Drop and Green Gage, a complete failure last year, are this season bearing good crops on walls. Damsons with us are plentiful. Peaches and Nectarines, where protected from the May frosts, are a full crop, in many cases requiring much thinning; trees clean, healthy, and promising. Bellegarde, Grosse Mignonne, Prince of Wales, Barrington, two of the very best late Peaches, are bearing good crops. Nectarines of all kinds have stood well. Lord Napier should be grown extensively on west as well as south walls. Albert Victor, Stanwick, and Elruge are very fine, but, like Victoria, they require a thoroughly good position and warm soil. Currants, Gooseberries, and Raspberries are abundant, clean, and fine. Strawberries on our cool soil are an immense crop, and the fruit is large and bright, the intense heat of the past week having just suited them. Walnuts promise to be abundant. Filberts light.—W. Coleman.

NORTH MIDLAND DISTRICT.

Radcliffe-on-Trent.—We are situated in the valley of the Trent, six miles east of Nottingham. We rise from the edge of the river up to the peculiar rounded uplands so characteristic of Nottinghamshire, our soil—sandy, with gravelly bottom in the valley generally, with variations of it up to the stiff clay of the higher lands—having a skerry bottom, which, I suppose, is a sort of bastard lias. The cliffs which overhang the Trent on the north side break the force of the winds from that quarter, as do also the highlands on the eastern side, which finish at the head of Belvoir. The centre and lowest part of the valley, lying, as it does, in the hollow between these two elevations, is, however, swept by the north-east winds, and so in their course they do us deadly damage when spring frosts occur. Apples are a very good crop, and the trees are in moderately good health. The cold wet of May rather caused the early foliage to become stunted and blackened, but the new growths, since the hot weather set in, are all that could be desired. Keswick Codlin, Blenheim Orange, Bess Pool, Northern Greening, Maltster, Caldwell, Barton's Free Bearer, and in some cases Ribston Pippin, are much grown. Apricots are a poor crop generally; where the trees were sheltered by glass copings they are, however, abundant. The cottagers here grow many trees on their house walls; on these it is only the late blooms that are set; the frosts of the last week in March entirely destroyed the first and best blooms. Pears are a fair crop. Early Catherine and Welbeck Bergamot are two largely-grown market Pears. Jargonelle, Williams' Bon Chrétien, Beurré d'Amanlis, Louise Bonne of Jersey, and Winter Nelis are very generally grown in gardens. Plums, taken as a whole, are a heavy crop. Mrs. Gisborne, Early Prolific, and Victoria are the heaviest croppers and the sorts chiefly grown. Damsons are a fair and even crop. Strawberries a good crop. Vicomtesse Héricart de Thury, Keen's Seedling, President (A 1), British Queen, Sir Charles Napier, and Frogmore Late Pine are sorts much grown. Amongst Raspberries, Fastolf and Fillbasket are the most grown; they are bearing good crops. Currants—Black, Red, and White—are also good crops, Black especially so. Black Naples, Red and White Grape, and Raby Castle are the sorts mostly grown. Gooseberries are a middling crop. Brown Bob, Lancashire Lad, Warrington London, Antagonist, and Red Champagne are all grown, besides others, the first-named varieties being the most common. Altogether, our fruit crops are not so bad as they are in some districts.—N. H. Pownall.

Chilwell.—I can give but a poor account of the fruit crops in this vicinity. We had an abundant show of bloom on almost everything, but little fruit will be the result. Our main crop of Apples is very poor; many of the trees are bearing no fruit at all, and the best are but thin. Perhaps Keswick Codlin, Northern Greening, and Court Pendu Plât are amongst the best. Pears are very scarce; there are a few Early Crawford, Grey Beurré, and Beurré de Capiaumont, but many sorts are quite bare; on the walls I see Doyenné d'Eté and Marie Louise d'Uccle bearing well. Victoria Plums and Damsons are about half a crop. Apricots are very scarce. Cherries are plentiful, as are also Strawberries. Gooseberries and Currants are thin crops, and the Currant trees much blighted.—A. H. Pearson.

Thoresby Park, Ollerton.—When trees were in bloom heavy crops were anticipated, but many of the flowers never set, and many that did set dropped off when the fruit should have begun to swell. This applies to Apricots, Apples, Pears, Plums, and Gooseberries, of which we shall have about half a crop; while Cherries, Currants, Raspberries, and Strawberries are abundant, and promise to be fine, especially Strawberries. As regards Peaches, Hale's Early is one of the best grown, being both early and large in size, with a fine colour when exposed to the sun. We have gathered a fruit of it off a young tree last week, grown in a late house, while fruits of Royal George, Grosse Mignonne, and others are not half swelled yet.—A. Henderson

Welbeck, North Notts.—Fruit crops promised to be abundant this year early in spring. In May, however, the weather turned out excessively rainy, with a low temperature, and some of the varieties were attacked with aphides and blights, and the young fruit, especially Apples and Pears, dropped off. In general these fruits will therefore be only partial crops, but nothing like a scarcity as there was last year. "A. D." (Vol. XIII., p. 630) gives an excellent list of Apples, growing in the bush form with him, that have borne freely this year, namely, Hawthornden, Lord Suffield, Mother Apple, Cellini, King of the Pippins, Sturmer Pippin, and to these varieties I have to add Irish Peach, Margil, Scarlet Nonpariel, Cox's Pomona, and Rosemary Russet, all grown here on the Paradise stock. The Sturmer Pippin I set down as one of the most valuable Apples grown, for it is a sure bearer and keeps well all the year round in a good fruit room. If these better and free-bearing varieties of Apples were planted in quantities along with late keepers, such as Blenheim Orange, Orange Pippin, Reinette du Canada, Dumelow's Seedling, Dutch Mignonne, and French Crab, in bad seasons there never would be a lack of Apples. On the strong soil of the kitchen garden here I find that Apples grown as bush fruit do best on the surface-rooting stocks, such as the Paradise and Doucin, and the Pears on the Quince stock. By adding litter or rich mould to the surface in dry seasons the trees are always kept fruitful. Pears on walls are only partially cropping this year, the best bearers being Beurre Bosc, Jargonelle (double-grafted), Beurré Giffard, Marie Louise, Louise Bonne of Jersey, Winter Nelis, and Hacon's Incomparable. On iron trellis the following kinds are bearing well, viz., Seckle, Bezi d'Heri, and Catillac (stewing Pears), Beurré Clairgeau, and B. Diel, Noveau Poiteau, Bon Chretien (Williams'), Beurré Bosc, Louis Bonne, and Marie Louise. The Apples on the same trellis are Small's Admirable, Court Pendu Plât, Alfriston, Pomme d'Api, Fearn's Pippin, and Mannington's Pearmain. Of Plums, Victoria, Cox's Emperor, Prince Englebert, Diamond, Imperial de Milan, and Kirk's are bearing best. Cherries are only thinly cropped, except Morellos on walls and the Kentish on standards. Small bush fruits, such as Gooseberries, Raspberries, and Currants (Black and Red) are plentiful crops here, but the aphides have sadly destroyed the foliage and injured the fruit. Strawberries showed abundance of bloom, but the wet, cold weather in May made many of the flowers "blind."—William Tillery.

Chatsworth, Chesterfield.—Spring here was unfavourable. We had upwards of 10 in. of rain in May and during the first ten days of June; consequently, vegetation made no progress, not even the weeds. Since then the weather has been better. Of Peaches, Nectarines, Apricots, and Figs, we grow none out-of-doors; we have to depend on indoor fruit chiefly the year round. Apples are a very thin crop. Plums none. Cherries good; May Duke, Elton, and Morello do best with us. Gooseberries are about half a crop; Warrington, Whitesmith, and Crown Bob are the best. Strawberries Vicomtesse Héricart de Thury, Underhill's Sir Harry (true), and Harry Veitch are our best. Currants are fine crops; White, Red, and Black, and Lee's Perpetual are excellent. Raspberries good; the best is Cutbush's Prince of Wales. Pears Jargonelle, Marie Louise, and Louise Bonne of Jersey are the best. Of Filberts we have none. —T. Speed.

Bloxholm Hall, Sleaford.—Fruit crops early in the season looked most promising, but the result has not fulfilled our expectations. This is not to be wondered at when it is remembered that we had an open, wet winter. In fact, we had no winter weather till the middle of March, when sharp frosts set in and continued up to the end of April; Apricots, Peaches, Pears, and Gooseberries were then in full bloom, and were very much cut up, except where well protected. Apples, Cherries, and Plums were not in bloom till after the sharp frosts were over. Apple blossoms opened apparently very well, and in many cases the fruit was partly formed; but, being injured by frost, much of it dropped off; and the same may be said of Cherries and Plums. Apricots are a fair crop where well protected, but where not protected they are a failure. Apples are a very poor crop, although we had an excellent show of blossom. Of Pears we have an average crop of some varieties, but generally they are deficient, both in quantity and quality. Plums on standards are a failure, but a fair crop on walls where protected from frost and birds. Peaches and Nectarines are a fair crop where well protected. Cherries were most promising, but three parts of them fell off before swelling, leaving a very poor crop; black fly has been very troublesome on Cherry trees this season. Strawberries are most abundant and fine—in fact, I never witnessed such a crop; Garibaldi is the kind chiefly grown here, and, in my opinion, it is the most useful Strawberry in cultivation. Figs out-of-doors are a fair crop, as are also Gooseberries, though a little injured by frost and very much so by bullfinches. Raspberries are a very fair crop, and the fruit is good. Red Currants are under the average, and the bunches are smaller than usual, the severe frost nipping them when in bloom. Both White and Black Currants are fair crops. Walnuts and Filberts are a partial failure.—DAVID LUMSDEN.

Waterdale, St. Helen's.—Where gardens are well sheltered, fruit generally hereabouts is plentiful, but in exposed situations the crops are thin. Kitchen Apples are plentiful, but choice sorts are thin. Pears in sheltered situations are bearing good crops, but where exposed they are light, both on walls and standards. Cherries of all sorts are good, especially the Morellos. Plums are only moderate, and amongst them there is a good deal of blight, with the exception of Damsons, which are mostly good. Where Gooseberries are well sheltered the trees are loaded to the ground, but where exposed they are almost fruitless, with the exception of the Red Warrington, which stands cold the best. Black and Red Currants are both well loaded. Raspberry bloom is plentiful, but looks poor and starved, as well as the foliage, even under favourable weather. Many fruits will be deformed, and the same may be said of Strawberries, although bloom is plentiful on all sorts and the foliage looks well.—JAMES SMITH.

Coleorton Hall, Ashby-de-la-Zouch.—Apples are thin crops in this neighbourhood. Apricots thin generally about here. Pears very poor. Plums of most sorts are a good crop. Peaches and Nectarines are very abundant, requiring much thinning. Cherries of all kinds a good crop. Strawberries showed abundantly, but did not set well, on account of the long continued wet weather. Figs are a good full crop. Gooseberries are thin. All other bush fruits plentiful, but much blighted. Filberts are an average crop. Of Walnuts we have scarcely any.—MONTGOMERY HENDERSON.

SOUTH-WESTERN DISTRICT.

Clevelands, Lyme Regis.—The Apple crop in this neighbourhood is almost a total failure. Pears also are very scarce; although the trees flowered freely, very few fruit set. Apricots are not grown much in this locality. Cherries are scarce. Peaches and Nectarines in some cases are a fair crop; in others there are none. Strawberries are a fair crop. Plums a partial crop. Gooseberries, Black and Red Currants, and Raspberries are plentiful. As a whole, the fruit crops in this neighbourhood are much below the average.—HENRY MUNRO.

Sherborne Castle.—Fruit crops in this neighbourhood are anything but good this season. All kinds, with the exception of Pears, bloomed well but weak, a circumstance which I attribute to the wood not being properly ripened last season, and to fertilisation not being able to take place owing to so much wet weather at the time when they were in bloom. Apricots are very thin. Apples about two-thirds of a crop, and the trees are very much blighted. Cherries do not do well in this vicinity, with the exception of Morellos, and of those we have a moderate crop. Pears are a failure, with the exception of the following kinds, of which we have a few on the walls, viz., Easter Beurré, Passe Colmar, Glou Morceau, Ne Plus Meuris, Beurré de Capiaumont, Jargonelle, and Marie Louise. Plums are very poor, and Peaches and Nectarines are a long way under the average. Nuts of all kinds will be scarce. Of Currants, Gooseberries, and Raspberries there is a very fair crop, and Strawberries are the best we have had for many years past both as regards size and quantity. Keene's Seedling, President, Vicomtesse Héricart de Thury, and Sir Charles Napier are the sorts that I find do best here. I am sorry to say that the Potatoes are getting very badly diseased; it made its appearance here quite three weeks earlier than usual. The soil in this neighbourhood is heavy, and is what is commonly called stone-brash; our sub-soil in low places is of a gravelly nature, but is generally, especially on the hilly grounds, very rocky.—W. G. PRAGNELL.

Wilton House, Salisbury.—Apples hereabouts are a very bad crop. The early blossoms were destroyed by the severe frosts and wet weather which occurred in April, and the continuous rain which prevailed throughout the month of May was equally destructive to the late varieties. Of Apricots we have a fair crop; they were protected by means of three thicknesses of $\frac{3}{4}$-in. bird netting. Cherries are a fair crop. Currants medium. Figs not an average. Gooseberries scarce. Peaches and Nectarines, protected by canvas blinds, are good crops. Nuts and Filberts are scarce. Pears are a moderate crop. Plums good on walls only. Raspberries are a great crop. Strawberries abundant and fine, but indifferent in flavour. Walnuts very scarce.—THOMAS CHALLIS.

Carclew, Cornwall.—Apples will average half a crop; they are best where sheltered from southerly gales, from which exposed trees suffered very much last spring. Soil light loam, very shallow, soon dries and cracks. Some local but second-rate sorts do well. The following answer best with us, viz., King of the Pippins, Oslin, Braddick's Nonpareil, York Pippin, Blenheim Orange, Golden Harvey, Boston Russet, Adams' Pearmain, Keswick Codlin, and Hawthornden. Of Pears we have scarcely any. Soil very unsuitable, and the fruit liable to crack. We get occasionally good specimens, but very second-rate as to quality. Beurré Clairgeau is our best cropper, but generally has to be used in the kitchen; Marie Louise, Gansel's Bergamot, Beurré Diel, and Duchesse d'Angoulême are most satisfactory on the whole. Apricots are not grown out-of-doors here. Peaches are a good crop, but the trees were much affected with swollen curl in spring, and we seldom get the wood ripened sufficiently. We cover with netting during the blooming period, but suffer from the east winds, the garden sloping sharply in that direction, so much so that the east wall affords no protection to the trees on the south wall. Nectarines do not succeed so well as Peaches. Of Plums we have one-third of a crop. The earliest ones do best; late ones often do not finish properly, and the same remark applies to Damsons. Of Early Cherries we have none; Morellos half a crop. Figs generally do well, but this year they are scarce. Gooseberries are a good crop and the fruit is fine in quality. Strawberries are a good crop, but not so heavy as might have been expected; Sir Chas. Napier is by a long way the best all-round Strawberry which we grow here. Of Raspberries we have a good crop of very fine fruit. We grow them on a north border; they do not succeed in open quarters. Of Red and White Currants we have two-thirds of a crop. Curiously enough, the bushes cast their foliage very early; they will be quite bare by the end of this month or first week in next, but I do not find that they suffer from this circumstance. Black Currants are a very good crop. For crops to succeed well in the garden here rain would be requisite every other day in summer, as mines—not worked in living memory—are in close proximity; in fact, they are under the kitchen garden, which, consequently, is drained too freely. The soil is about 1 ft. deep, and the sub-soil useless for bringing to the surface. There are great complaints of the failure of the Apple crop in the surrounding neighbourhood, also of Pears in gardens. Apple orchards in this county are generally planted in low sheltered situations to guard against damage from winds, one, if not the chief, enemy to them here both when in blossom and fruit.—G. PALMER.

NORTH-WESTERN DIVISION.

Worsley Hall, Manchester.—Fruit crops in this district generally are about the average. Stone fruits are never good here; our soil does not suit them. The garden is situated on the border of Chat Moss; a good part of it is pure Moss; the rest has been heavily dressed with loam and clay. Though the trees grow fairly well, still they have never borne good crops. Apples will be a fair crop, especially Lord Suffield and Keswick Codlin, which sorts do as well as any. Irish Peach always bears well, but the fruit is undersized and inferior. Pears are a good crop; Beurré Diel and Easter Beurré are the only exceptions. Marie Louise promised well, but the blooms suffered in spring. Morello Cherries are heavily laden, and will help to take the place of Plums, which are deficient. Many of the earliest, and of course the best, blooms of Strawberries were destroyed; still we have fair crops of rather small fruit. Vicomtesse Héricart de Thury and President are the best. La Grosse Sucrée promises well, and we are increasing our stock of it. Gooseberries are under the average, but good. Currants are a capital crop, except Black kinds, which are greatly injured by a mite which defies all attempts to eradicate it. Raspberries promise well, though the unusually dry weather seems to be affecting their swelling. Peaches barely exist even on a south wall; all ours are under cover.—W. B. Upjohn.

Abney Hall, Cheadle.—This, upon the whole, promises to be a fair fruit year with us. Of Strawberries, we have gathered a good crop of Black Prince for preserving; the other two sorts which we mainly grow, Lucas and President, are now swelling satisfactorily. The protecting material which we put on our Vine borders for the winter is used in spring for putting between the rows of Strawberries, and this, we find, acts as a manure, and at the same time keeps the fruit clean. Red Currants are a plentiful crop. Black ones an average crop. Raspberries are an average crop. Gooseberries a good crop. Apples are very abundant on some of the trees here, and when in blossom they were a fine sight. Pears are not nearly so abundant as Apples; there is, however, a good crop on Williams' Bon Chrétien, Beurré d'Aremburg, and a few others. Plums are a fair crop, the Victoria being overloaded. Cherries are an average crop. Peaches, Nectarines, and Apricots are not much grown out-of-doors in this district.—Robert MacKellar.

Crewe Hall.—Apples are scarcely up to the average hereabouts, and the same may be said of Pears. Plums are very plentiful, much more abundant than they have been during these last few years. Apricots and Peaches are under the average. Gooseberries the same. Currants are an average crop. Strawberries a very abundant crop, and the fruit large and good. Raspberries are also plentiful and good. Owing, I have no doubt, to the absence of sunlight and the low temperature during the greater part of last summer and autumn, the fruit-bearing wood of many trees was imperfectly ripened and showed but little bloom, and in many cases much of that fell off without setting. This was especially the case with Peaches, Nectarines, Pears, and Apples. Our soil is light and friable, and well suited for fruit trees, but rather too much shaded. We protect Peaches, Nectarines, Apricots, and some Pears on the walls with canvas covers, which generally secure good crops; but this spring protection was not much needed, except in the case of Apricots, as we had no late frosts. Damsons are much grown in this district, and this season they are a very good crop. The sorts of fruit upon which I rely for our principal supply are chiefly Moorpark Apricots; Early Louise, Royal George, Noblesse, Early Alfred, Dymond, and Walburton Admirable Peaches; Elruge, Rivers' Early Orange, Pineapple, and Victoria Nectarines; Green Gage, Coe's Golden Drop, Jefferson, Kirke's, Victoria, and White Magnum Bonum Plums; Jargonelle, Williams' Bon Chrétien, Louis Bonne, Marie Louise, Winter Nelis, Glou Morceau, and Easter Beurré Pears; Keswick Codlin, Hawthornden, Lord Suffield, Minchall Crab, Cat's-head, and Norfolk Beefing kitchen Apples; Irish Peach, Margil, Ribston and Wormsley Pippins Court Pendu Plât, and Nonpareil dessert Apples; President, James Veitch, and President Delacour Strawberries; and for forcing, Keen's Seedling, Vicomtesse Héricart de Thury, La Grosse Sucrée, and President.—Wm. Whitaker.

Eaton Hall, Chester.—The fruit crop, with the exception of Strawberries, Cherries, and Plums, will be very much below the average in this neighbourhood. Apples and Pears bloomed well, but the crop is light. Apricots are scarce. Plums, both standards and on walls, are a fair crop. Gooseberries are very scarce indeed. Currants better. Strawberries are unusually plentiful and fine; on our stiff, heavy soil we find no Strawberry succeeds so well as Sir Harry.—Thos. Selwood.

Belvoir Castle, Grantham.—The present season has taught us that there exist circumstances of weather as antagonistic to the well-doing of fruit trees as absolute frost. During part of April and May, the period when fruit trees were generally in bloom, no frost occurred, and the promise of Apples and Pears was very great; but a blight fell upon fruit trees in June, the leaves curled and became blotched and disfigured by dead patches, and the fruit fell from many trees. Thus the crop of orchard fruit will be much less than was anticipated. It will be useful to record the kinds of Apples that are likely to bear satisfactory crops this season, and thus show constitutional hardiness. The record of rainfall during May, and a chilled soil submerged with wet from $4\frac{1}{4}$ in. of rain, was unquestionably one of the potent causes of the state of things I have described. The following Apples, situated in three large orchards and all in heavy soil resting on lias clay, show a satisfactory amount of fruit, viz., Hawthornden, Eve Apple, Downton Pippin, Cox's Orange, Pomona, Blenheim Orange, Beauty of Kent, Golden Noble, Northern Greening (a constant bearer), Golden Russet, Bess Pool, Lincoln Pippin, Caldwell, Ribston Pippin, Sturmer Pippin, Margil, Herefordshire Pearmain (very constant), King of Pippins (very prolific), Yorkshire Greening, and Frogmore Prolific (unfailing). Pears are not so badly blighted, but the fruit fell from standard trees in the same way as the Apples. The following kinds, trained on south-east and west walls, show well for fruit, viz., Old Crassane, Autumn Bergamot, Bergamotte d'Esperen; Soldat d'Esperen, Marie Louise, William's Bon Chretien, Orpheline d'Enghein, Bonne d'Anjou, Triomphe de Jodoigne, Knight's Monarch, Doyenne d'Ete, Citron des Carmes, Beurre Diel, Beurre Clairgeau, and Josephine de Malines. Peaches moderate under Rendle's coping. Apricots thin. Plums are excessively abundant, Victoria, Golden Drop, and Jefferson being too much loaded. The Cherry crop is also very abundant, especially Kentish. Strawberries are a large crop. Currants good. Gooseberries thin.—W. Ingram.

Otterspool, Liverpool.—Fruit crops in this neighbourhood are, generally speaking, good, except Peaches and Damsons, which are almost failures. The Apple crop here is fairly good; but there are many cases just the reverse, and I hear many complaints of whole crops of Apples and Pears falling entirely off where the subsoil is at all heavy or wet. With a light soil and a fairly good situation, we are more fortunate here. All the old varieties of Apples and Pears are carrying full crops; Marie Louise, Louise Bonne of Jersey, Beurré Diel, Passe Colmar, Glou Morceau, and Winter Nelis are bearing excellent crops, many of which have had to be thinned more than once. Lord Suffield is the Apple for this climate, and, indeed, is good everywhere. Cherries are a moderate crop. Strawberries are quite a full crop, the best being those that were forced in pots last season; old plantations are fast disappearing before the hot weather where the soil is light; Vicomtesse Héricart de Thury and Sir Charles Napier are the most certain croppers. Gooseberries, Raspberries, and Currants are a full crop, and quite up to the ordinary standard in point of size. Potatoes are a fine crop; I have noticed but one or two attacked with disease as yet.—W. Hinds.

Haigh Hall, Wigan.—In this locality the Apple crop is under the average; Lord Suffield and Cellini have done best. Pears are a very thin crop. Plums above an average, especially Victorias. Cherries blossomed abundantly, but failed to set, and are not half a crop. Strawberries are fine and abundant. Gooseberries good. Red and Black Currants plentiful. Raspberries a very fine crop. The gardens here are very much exposed to east winds, which are every year more or less destructive to the fruit crops.—A. Jamieson.

EASTERN DISTRICT.

Culford Hall, Bury St. Edmunds.—At this place, and as far as I can ascerain in this neighbourhood, the Apricot and the Peach crops may be said to be failures. Both looked at one time as promising as could have been desired, but 17° of frost on the morning of April 1 proved too much for them even under a glass covering extending 6 ft. from the wall. The same low temperature proved in a great measure fatal to the Apple and Pear crops. As regards the latter grown as standards, nearly all are failures, except such hardy sorts as Swan's Egg, Green Pear of Yare, and Williams' Bon Chretien, while very few Apple trees are bearing so much as half a crop. Plums on east and west walls are plentiful, but the trees are not in good condition, and can with difficulty be freed from aphides. Damson and other sorts grown as standards are failures. Morello Cherries on north aspects are looking promising and carrying good crops. Figs on open walls as well as under glass will be a light crop. Walnuts, Nuts, and Filberts will all be very light and partial, many trees being without a fruit upon them. The Gooseberry crop is very light, the severe weather experienced during the first week of April having caused the blooms to fall off in great numbers. Raspberries will be a moderately good crop, but the fruit appears to be smaller than usual. Currants of all sorts will be plentiful, and Strawberries are abundant and remarkably fine. I may add that some old trees here of the various kinds of dessert Apples trained to a low wall with a west aspect are producing good crops, and the trees are looking more healthy than usually. Medlars are a fair crop, but Quinces are a failure. Taken altogether, this season hereabouts will be distinguished by the paucity of the fruit crops generally. The soil here is light and dry upon chalky formation.—P. Grieve.

Hardwicke House, Bury St. Edmunds.—In the garden here Peaches and Nectarines are a fair crop. Apricots the same, where heavily protected with glass copings, nets, boughs, and canvas; absolutely none under glass copings alone. Pears very meagre in blossom and thin in fruit. Apples promising when in blossom, which remained, however, too long on the trees; it was also wanting in colour, indifferent as regards setting, and much of the fruit fell off. The trees seem to be blighted with something much like mildew. Cherries about half a crop; Morellos plentiful. Plums a fair crop, especially the Victoria and Violette Hâtive on walls. As to exceptionally good crops, I can find none among Pears. Among Apples, the Keswick Codlin, Kerry Pippin, Warner's King, and New Hawthornden are the best; Cellini, which has mostly set freely, is almost bare of fruit, unless in an exceptional case now to be noticed. A length of diamond cordon Apples, stretching the whole length of the garden, and heavily protected with shrub branches, has hardly a barren tree in it, while the same varieties as pyramids are without fruit. Gooseberries, Currants of all sorts, and Raspberries plentiful. Strawberries in these gardens a full crop of fine fruit. As to the district, it is very bare of fruit. The walls, unless where heavily protected, are almost bare. Pears have not been so thin for years. Plums are also scarce, and Cherries, unless here and there. The Apples that have set are falling in shoals, pierced by a maggot, weakened by blight, or through imperfect setting. Gooseberries scarce; immense quantities totally destroyed in flower or in a young state. Currants generally a fair crop. Raspberries scarce. Strawberries very varied; the crop promised well generally, but was wrecked in many gardens by the continuous rains and wet cold weather that continued up to June 20. Outdoor Figs are also thinner than usual. Never, perhaps, has fruit dropping been so prevalent as this season. It extends to all fruit, including Figs. At one period the latter showed well; but the fruit has been falling fast for weeks, and comparatively few are left. The fruit prospects of the year are by no means bright. Fortunately, glass and artificial heat render us independent of the seasons to a great extent. The qualification is inserted advisedly, as I have heard this season of stone fruits and Grapes not being up to the usual mark. It may be added, for the comfort of those who find consolation in having many companions in adversity, that the fruit crops of France seem but little brighter than our own. Cherries and Strawberries are a fine crop across the Channel, but beyond these the prospects are anything but brilliant, and Peaches and Pears, unless in exceptional localities, seem little better than in England.—D. T. Fish.

Gunton Park, Norwich.—Peaches and Nectarines here are thin crops, though protected with frigi-domo; Violette Hâtive and Barrington Peaches withstand the cold, east winds here best. Apricots, protected with three thicknesses of fish nets, flowered well and set a heavy crop, but it was nearly all destroyed by the frosts which occurred on March 24 and 27 and on April 1 (when we had here 8°). Apples are a heavy crop on some trees, while on others there are none. All flowered well, but in the case of many of the trees the blossoms were entirely destroyed by the heavy, cold rains that we had daily when the major part of the trees were in flower; the trees promised so well that at one time I feared the crop might be too heavy. The kinds on which we have most fruit in this neighbourhood are Lord Suffield, Keswick Codlin, Nelson's Glory, Tower of Glamis, Ribston Pippin, and Red Astrachan. Pears are a very thin crop; some of the trees promised well, but a very light crop is the result. The best crops are on Williams' Bon Chrétien, Comte de Lamy, Josephine de Malines, Beurré Bosc, Jersey Gratioli, and Beurré Clairgeau. Strawberries are a fine crop; the heaviest cropping kinds on our sandy loam are President, Sir C. Napier, Vicomtesse Héricart de Thury, Sir Harry, Sir Joseph Paxton, James Veitch, Lucas, and Crimson Queen. Of dessert Cherries we have a fair crop of Bigarreau and Napoleon; Morello Cherries are very light. Currants a heavy crop. Gooseberries medium. Filberts on pruned bushes a fair crop. Figs very thin.—W. Allan.

Woolverstone Park, Ipswich.—The condition of the fruit crops in these gardens and around this district is most unsatisfactory, for although there was a good set of most of the hardier kinds such as Apples, Plums, Pears, and Cherries, the embryo fruit was evidently much injured during the severe frosts that prevailed towards the end of March, as the greater portion has since fallen off, and those that remain are swelling very irregularly and appear as if they would never attain their proper form or size. This is more particularly the case with Plums on walls, and Cherries were nearly as bad, the stones of many of which were only just covered with skin, and these hung on the trees till quite recently, but the Plums we have had to thin. Gooseberries are nearly bare, many of the bushes being entirely so, and the bunches of Currants are very gappy, especially the Red and White kinds, but Raspberries are bearing fair crops. Strawberries gave promise of being unusually abundant and would have been so had the pollen a chance of ripening, but unfortunately the flowers were nearly always wet, which prevented the fruit from setting in the free manner it otherwise would. The British Queens have suffered most and Eltons next, while Keen's Seedling and other kinds withstood the damp better, probably from being a little more forward and the weather a trifle better just at the critical time they were in bloom. Figs, which, owing to the favourable autumn and mild winter, were full of fruit have, since they came into leaf and the cold and wet set in, shed nearly the whole of them, so that the season for these will be one of the worst we have had for a long time past. Apricots are very thin, but what there are are swelling fast, and promise to be unusually fine. Peaches and Nectarines, where heavily protected by branches of evergreen and other coverings, in addition to wood copings, have fair crops, but in all other cases the frost that occurred on the night of April 1 proved too much for them, and did a great amount of damage to the trees, from which they are only just now recovering. The Apple crop about here will be a very poor one, and in many places the trees are badly blighted, the leaves being discoloured and curled in such a manner as to look like having been burned or scorched by hot air, so shrivelled do many of them appear. The sorts bearing best are Cox's Orange Pippin and Keswick Codlin, the former an Apple that should be largely planted, as it seldom fails, and is one of the most satisfactory for both culinary and dessert purposes that can be grown. Pears are very thin on walls, but better on pyramids, and the trees, favoured by the heavy rains, are looking well and making plenty of wood. Passe Colmar is generally good with us in our light warm soil, as are also Glou Morceau, Marie Louise, Louis Bonne, Josephine de Malines, and Bergamotte d'Esperen, the latter two the only really late Pears that are worth growing, and even these require good aspects to get them well up. —J. Sheppard.

Audley End, Saffron Walden.—The gardens here lie very low and close to a river, consequently, we suffer very much from spring frosts; the soil is rich and pretty deep, resting on a gravelly subsoil. Most kinds of Pears do pretty well on the Quince stock. On some varieties we have a good sprinkling of fruit, but many trees had no bloom on them. A few of the earliest kinds were injured here by frost on April 1, but in the higher districts they escaped. Apples do well generally in this neighbourhood, but in the gardens here they often ripen prematurely in dry seasons; this year there is not half a crop. Apricots set well, but the frosts in April, even where covered with thick canvas, with but few exceptions killed the young fruit. This is the only kind of fruit tree to which we give any protection. Cherries are a fair crop, especially Morellos, which do remarkably well here. Currants of all kinds are abundant, with the exception of some of the newer varieties of the Red, which show the bloom before the leaves. These were very much injured by frost. Figs are promising; the Brown Turkey is the only variety which we grow. Gooseberries were nearly all killed on April 1. Peaches and Nectarines might be put down as almost a total failure, excepting in the higher districts, where there are fair crops. Here the last few bad seasons have nearly killed the trees. Of Nuts we have a sprinkling, with the exception of Walnuts, of which we have scarcely any, but in higher places they are better. Of Plums we have a very fair crop; most varieties do pretty well here. Raspberries are a fair crop. Strawberries are abundant and very fine; our best varieties on this light soil are Sir J. Paxton, President, Keen's Seedling, and Black Prince for the earliest, and which do well if fresh planted every year. We also grow Trollope's Victoria, Elton Pine, and British Queen. Other varieties we have tried, but the above are the best. None of them do well, however, more than two years.—J. Bryan.

YORKSHIRE.

Wortley Hall, Sheffield.—The crops of Apples and Pears here will not be so good as they promised to be when the trees were in flower. Two or three cold days, with occasional showers of sleet and hail, after a week or two of almost forcing weather, just when the fruit was setting, did considerable injury to the blossom; still there will be a good sprinkling of fruit. Cherries are good, Plums poor generally, and Apricots scarce. Small fruits are a light crop, except Strawberries, which are plentiful, but late, Black Prince not yet (July 3) having yielded a gathering in the gardens here. Potatoes were rather diseased-looking a fortnight ago, but the late warm weather has restored them, and they now promise well. Nobody in this district remembers such a plague of slugs as has been this season; crops have only been saved after frequent sowings and much trouble. The rainfall during the latter part of May and the beginning of June was over 8 in.—J. Simpson.

Ribston Hall, Wetherby,—Fruit crops this season are unusually light. Apricots, though on a south wall and protected with old nets, are a very thin crop. Peaches and Nectarines are very partial; some have to be thinned, others are almost destitute of fruit. Gregory's Late, Barrington, and Walburton's Admirable Peaches have set well. Plums on walls have set well; Coe's Golden Drop, Victoria, Kirke's, Jefferson's, and Reine Claude de Bavay are good. All standard and bush Plums are almost a failure. Pears are also very partial. The lower leaves are much affected with spot, caused, no doubt, by the late rains; and Apple trees have suffered in the same way. The ground under the trees is covered with dead leaves. On Beurré Diel, Winter Nelis, and Beurre d'Aremburg there are good crops. Of Marie Louise we have but few. Apples are unusually thin and the trees look miserable. Keswick Codlin and Manks Codlin are the best. Ribston Pippin, which has not failed for twenty years to produce as many as we required for dessert, I should have no difficulty in counting this year. Gooseberries are thinner than I have known them for years, Ashtons especially, and yet in the case of some of the Lancashire show sorts we have had to use props to keep the fruit from the ground, so heavily are they laden; they were in bloom early, and got out of danger before the frost of April 1. Strawberries and Raspberries are fair crops. Cherries are not worth netting, except Morellos. If crops of fruit were like the crop of slugs, we should have no reason to complain.—Thos. Jones.

Bretton Park, Wakefield.—The state of the fruit crops in this neighbourhood is far below what was at one time expected. Since the end of April to the beginning of last week we had not one sunny day, the weather being wet, damp, and cold, and even occasionally frosty at night; consequently, the trees have become infested with mildew and fly. Peaches, Apricots, Plums, and Pears on walls are almost a failure; standards of the two last-mentioned are fruitless. Apples are scarce; many trees have not a fruit on them. The only kinds that are bearing full crops are Lord Nelson, Hawthornden, and Ribston Pippin. Strawberries, Raspberries, and Currants are abundant. Gooseberries about one-third of a crop; in many gardens near here there is not a single berry. Cherries have dropped while stoning. May Duke has proved the best. Morellos are a poor crop. The soil in this neighbourhood is generally of a heavy stiff character, with a clayey subsoil.—Geo. Clifton.

Thorpe Perrow, Bedale.—Fruit crops in this part of the North Riding of Yorkshire are anything but good generally. Apples are almost a failure. At this place the early autumn sorts are pretty good, but late sorts were killed on May 19 by hail and snow, followed on the same night by 7° of frost. Apricots are a very moderate crop. Kentish Cherries are very abundant; other sorts not so good. Pears are good generally, especially Marie Louise, Beurré Diel, Winter Nelis, and Glou Morceau. Peaches, too, are good. Plums on many trees required considerable thinning. All kinds of bush fruits are very abundant. Strawberries are plentiful and fine. Apple trees have suffered very much from the cold, wet spring, and the leaves are falling from the spurs as if it were autumn.—William Culverwell.

Grimston Park, Tadcaster.—Apples hereabouts are, on the whole, a light crop; Cox's Orange Pippin, Lord Suffield, Warner's King, and a local variety called Cockpit, are our most regular croppers. Apricots are thin; Moorpark is the variety mostly grown in this part of Yorkshire. Peaches and Nectarines are also scarce; Royal George, Bellegarde, Early York, and Walburton Admirable are our best Peaches, and Violette Hâtive the best Nectarine. Plums are thin on standards, but fair crops on walls; Victoria, Jefferson, and Green Gage are the best croppers. Winesours are very much grown as standards; Sherburne, some few miles from this, is quite noted for them. One grower there can usually dispose of his fruit at about 10s. per peck of 18 lb. Cherries are thin, even Morellos, which nearly always produce heavy crops. Pears are partial; on Jargonelle and Marie Louise, which are our best cropping sorts, there are fair sprinklings. Small fruits are abundant and promise to be fine, with the exception of Gooseberries, which were much damaged by the severe frosts and snow which we had about the middle of April. These frosts are blamed for the generally thin crops which we have hereabouts, but, in my opinion, they are not the true cause of the failure. For my own part I never expected good crops of choice fruit this year, at all events in the north. Could good crops (excluding small fruits) the year after such a cold, wet, sunless summer as we had last year be expected? We had plenty of bloom on all kinds of fruit, but it was weak, and in many cases very imperfectly developed. Our soil here is a stiff loamy one, resting on magnesian limestone.—H. J. Clayton.

NORTHERN DIVISION.

Raby Castle.—Apples are almost a failure, although there was plenty of bloom and at one time apparently a good portion of it had set, but there was unquestionably debility both as regards bud and flower, arising no doubt from the want of sunshine last year. Trees that I have trained against walls, such as Ribstons, are bringing forward good healthy crops; a few other trees in very sheltered situations are producing good half crops and are in good health, but trees more exposed have a wretched, stunted appearance, the tops of the shoots being all scorched as if by fire. Pears are a light crop, but the trees are remarkably clean and healthy. Of Apricots we have plenty, if quality be preferred to quantity, and the trees are making strong growth, but canker is still making sad havoc where not immediately cut out. Branches which are diseased should in all cases be cut off just below the cankered part. Every particle of canker should be cut out, leaving nothing but what is perfectly sound and healthy. Healing the wounds would be greatly facilitated by plastering them over with fresh cow manure and clay well mixed together. In this way air is excluded and a little moisture is retained about the wound, which greatly assists the healing process. I have always observed that what are termed "rider" Apricots are less susceptible to canker than dwarf trained ones. We have here a rider trained between two dwarfs, and both the latter are dead. Canker, I imagine, originates at the point of union between the graft and stock, which probably is the most sensitive part of the tree. These unions in the case of dwarfs are made so close to the ground, that they are constantly exposed to extreme variations; therefore nurserymen should provide us with trees having stems 3 ft. high instead of as many inches. Peaches and Nectarines are not grown here on open walls. Cherries of the dessert class are good; of Morellos we have very few. Plums are a good crop; of Victoria and some of the free setting kinds we have abundance; but no Damsons. Of Gooseberries we have only a few; the bushes, like Apple trees, are very much blighted. Currants, Black and White, are abundant, of Red there is about half a crop. Raspberries are plentiful, but stunted. Of Strawberries, plenty set, but only a few are swelling, and these are small.—R. Westcott.

Lambton Castle.—Fruit crops in Durham suffered severely from late frost, more especially from that which occurred on May 21, which caused most of the early fruit to drop. Apples here are best on pyramids, eight years' planted, in a heavy soil. All bloomed freely, and showed signs at one time of great abundance; but now those which have most fruit on them are the following, viz., Ribston Pippin, Mannington Pearmain, Scarlet Nonpareil, Boston Russet, Reinette du Canada, Magnum Bonum, Keswick Codlin, Rymer, Lord Suffield, Cellini, Blenheim Orange, Cockle Pippin, Claygate Pearmain, King of the Pippins, and Manks Codlin. Pears suffered in the same way as Apples. The following are bearing most fruit, viz., Easter Beurré, Jargonelle, Incomparable Beurré, Hessle, Green Yair, Louise Bonne of Jersey, Althrop Crassane, Beurré de Capiaumont, Vicar of Winkfield, Beurré Superfin, Passe Colmar, and Comte de Lamy. Apricots are a failure, and the same may be said of Peaches and Nectarines, except in favoured spots where protection has been given them. Cherries are a good average crop and fine in quality. Plums are also well cropped and, to all appearance, going to be good. Gooseberries suffered sadly from late frosts, very few fruits being retained on the bushes, which are healthy. Strawberries are good, both in crop and quality. Currants of different kinds are fairly represented; also Raspberries. Lambton Gardens lie on the banks of the River Wear, about seven miles from Sunderland, and so near the level of the sea, that the river rises some 6 ft. or 10 ft., so influenced is it by the tide, causing vegetation to suffer much from early and late frosts.—J. Hunter.

Seaham Hall, Sunderland.—The gardens here are about 1800 ft. from the sea, and we are therefore subject to easterly winds and a constant change of temperature. They slope towards the south and are surrounded by trees. The soil consists of two kinds—one light and sandy, the other a stiff clay, which becomes hard and bad to work, except in wet weather; in fact, we can do with a shower daily, as the garden lies on limestone rocks. The locality produces little fruit, except common sorts. Apples are scarce in this district; Hawthornden, Ribston Pippin, and a small Pippin supposed to be Downton, are the only sorts that are bearing a crop; these are rather exposed to the wind, and therefore were in blossom later than the others; there was abundance of bloom, but at that date we had cold wet weather. Pears are very scarce; on common sorts there are a few, but good sorts will not ripen. Plums will not set their fruit being too near the sea. Peaches and Nectarines have set a fair crop on walls, but they are never worth the trouble of culture out-of-doors. Raspberries are always a sure crop, and they look very promising this season. Strawberries are also always a good crop, but they require a wet season; at present they look promising. Gooseberries of all sorts do well; the only risk they run is from late spring frosts and east winds. Since I left off pruning the bushes I get double the quantity of fruit, owing to the branches protecting the blossoms, and in a few seasons they require no pruning, as they make no wood. Of Currants, Black and Red, we are always sure of a crop, as they flower ten days later than the Gooseberries. Potatoes look well; they have plenty of foliage and no signs of disease. Slugs and weeds have been very troublesome this season.—R. Draper.

Alnwick Castle.—Fruit crops in this neighbourhood are not very satisfactory. With us Apples are almost a failure, with the exception of late sorts. Apricots are rather thin, but what fruit is left is looking well, and the trees are clean and healthy. Early Cherries are a fair crop; Morellos very thin. Currants and Gooseberries, with few exceptions, are tolerably good. Raspberries and Strawberries are abundant. Pears are a good crop, except where much exposed; most sorts do well here. Green Gage Plums are thin. Of others sorts we have good crops. Golden Gage is one of the best Plums with which I am acquainted, and a sure cropper if properly managed. Peaches and Nectarines on a south wall, well sheltered, are a good crop; on another south wall, more exposed, they are very thin, but the trees are all healthy and making good wood; Prince of Wales, Dr. Hogg, Royal George, Barrington, and Bellegarde Peaches; Pine-apple, Pitmaston Orange, Elruge, and Hardwick Seedling Nectarines, are most to be depended on in such seasons as those we have had of late. We seldom suffer from late frosts here, as the soil is light and dry, at an elevation of nearly 200 ft. above sea level. What we suffered most from, both this year and last, is the long continuance of cold wet weather during the flowering and setting period. We protect stone fruits on walls in spring with double herring nets, stretched tightly on poles, 4 ft. apart and 2 ft. from the wall at the ground, their tops being under the coping. I have tried many kinds of covering for trees, but I have found nothing to equal herring net if properly put up. Its cost is not much, and the trouble attending its application very little. It affords great protection to the trees, and does not obstruct light and air.—A. Ingram.

Shawdon Hall, Alnwick.—The Apple crop in this district is again all but a failure. Notwithstanding the sunless year of 1877, the trees were loaded with blossom and great hopes were entertained of an abundant crop, but this has not been realised. The fine weather in March was followed by heavy rains during the latter part of April and May; the temperature of the nights hardly ever rose above 35°; and the result is, that that most valuable and indispensable of out-door fruits, the Apple, has again failed, and not only is the fruit a failure, but the foliage of the trees in many places is blighted and falling to the ground as if it were early autumn. Small fruits vary much in different places. Gooseberries have failed in some quarters, while in others they are a fair crop. The same holds good regarding the different sorts of Currants. Strawberries are exceptionally fine this year; they are late, but likely to prove an abundant crop. Raspberries have suffered from the same cause as the Apple trees, and their foliage is blighted and falling off. Wall fruits have become such a precarious crop in our northern district, that no correct statement respecting them can be given. The Peach only comes to full perfection in exceptional situations, but under glass both it and the Nectarine attain a quality equal to that obtained in any district in England. This year there is a fair crop in places even where no protection has been used; in others where different kinds of material have been kept on the trees the fruit is a failure. It therefore becomes a question worth consideration whether or not in wet springs covering fruit trees with netting of various kinds does not do more harm than good. I have seen nets in some places kept over the trees even during the day. Apricots are an average crop in most places; unlike Peaches, they are healthy and clean in the foliage. Moorpark is the standard kind in the north of England, other varieties are only grown for succession. Plums are seldom taken into account in many parts of this district; the old sorts are still the only kinds to be seen in many of our best gardens. This is to be regretted, as they form a valuable addition to the dessert table. River's Early Prolific is a most useful early variety; nevertheless, it was so little known in this district, that the first time I showed it in a collection of fruit few people would believe that it was a Plum ripened in the open air in the early part of August. This fine early Plum can be followed up by other sorts in succession till October. The Cherry crop is very meagre; the fruit did not stone, and consequently have dropped. Altogether, the fruit crop in Northumberland is below the average both in quantity and quality. This last defect is owing to the blighted state of the foliage, caused by an extremely low temperature.—J. Thomson.

Figs in Pots.—At Messrs. Veitch's Fruit Tree Nursery I recently saw several ranges of houses exclusively devoted to Figs in pots, and most useful they are where forced Figs are in request. The old Brown Turkey kind still appears to maintain its popularity, and, amongst new sorts, Negro Largo seems to be held in high estimation, while some other kinds not yet in commerce appear likely to eclipse all their predecessors as regards fruitfulness. The merits of Figs of the newer kinds are only just beginning to be recognised, and for the future better places must be found for Figs planted out than the back walls of Vineries and similarly shaded houses. No wonder that a plant which revels in sunshine in much hotter countries than this could not ripen its wood or the fruit attain its maximum flavour under such circumstances; but keep the roots under control in pots or in brick compartments, and give the tops all the light and air possible, and the Fig will now, as of old, maintain its proverbial character for fertility.—J. Groom.

ANSWERS TO CORRESPONDENTS.

Orange Nectarine.—Will this Nectarine stand forcing? This season it is a failure with me, although every attention has been paid to it, such as watering and setting the bloom.—E. S. [The Orange Nectarine is not a good forcer; at least, such is our experience. We prefer the following for that purpose, viz., Elruge, Pitmaston Orange, and Violette Hative.—W. W.]

Weeds on Lawns.—Is there anything that will kill weeds on lawns, such as Daisies, Buttercups, &c.—Subscriber. [Try Watson's lawn sand.]

Sudden Failure in Raspberries.—The Raspberry plantation alluded to in last week's Garden (p. 21) will require renewing. The treatment could not have been better, and we can only account for their sudden failure by a want of vigour to enable them to withstand the extreme heat of the last ten days of June. Raspberries prefer a moist situation; it cannot be too moist; provided the drainage is effective.—W. W. H.

Tropæolum azureum.—In answer to "D.," I may state that I have employed both the balloon and flat trellises, and with care in training the plants may be made to cover them from the pot upwards. I have found them, however, to grow stronger when allowed to ramble in a more natural and unrestrained manner, as on a trellis near the roof. The manner of training, as well as the situation, which "D." has described as having suited Jarratti will do equally well for this species.—J. Cornhill.

Names of Plants.—*Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible,* i.e., *both stem, leaves, and flowers, and fruit, when possible. We cannot attempt to name plants from single leaves. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as Fuchsias or Pansies, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.*—*C. M. W.*—1. Cereus serpentinus. 2. Echinopsis Eyriesi. 3. Opuntia cylindrica. 4. Pereskia aculeata. *F. E.*—Adenacalymna comosa. *Mrs. M. A.*—Roses should be sent to some Rose grower, who has the means of comparison at hand. *C. F.*—Teucrium fruticans.—*J. E.*—1. Pastinaca sativa. 2. Scabiosa arvensis. 3. Carduus arvensis. 4. Centaurea nigra. Bentham's Handbook of the British Flora. *W. C.*—The orange-flowered shrub appears to be a Cassia. The other—not in flower—is indeterminable. *Sub.*—The Welsh Poppy (Meconopsis cambrica).

Amaryllids and their Treatment.—What is the proper treatment, at this season of the year, of Amaryllis Belladonna, vittata, and the Nerines. Will you kindly ask someone when they should be dried off? and for how long? and when started again? Should they be kept without any water, like the other kinds of Amaryllis? By proper attention to growing and resting, can they be made to bloom every year, like Amaryllis Prince of Orange or Regina? I have no greenhouse, only cold frames and hot beds.—Jas. R. Townsend, *Cedar Street, New York.* [Amaryllis Belladonna for flowering in pots should be treated somewhat the same as Vallota purpurea. After flowering it should have plenty of water, and should be nearly shut up in a close frame until it has made good flowering bulbs for the next season; then it should be gradually dried off. It does best out-of-doors, but to grow and flower it well the bulbs should be planted about 6 in. deep in a good rich border in the full sun, where they may remain for years without being transplanted, and will produce an abundance of flowers. Amaryllis vittata should be treated precisely the same as other Amaryllises. Nerines also require much the same treatment as Amaryllises; they flower chiefly in autumn, and if properly dried off the flowers are thrown up before the foliage. As soon as the flowering is over, the plants should be placed in a close frame and kept well syringed, so as to make good flowering bulbs for the following season.—B. S. W.]

Questions.

Stump the World Peach.—Do any of your correspondents know any thing of this Peach? Grown in the same house, it succeeds Royal George and Violette Hâtive. We find it to be a very free bearer, and the fruit to be large and handsome and a good traveller.—A. Henderson, *Thoresby Park, Ollerton.*

Cure for Rats.—Will Baron Von Baekhoven (see p. 16) inform us what is meant by common Squills? Is it Scilla nutans? or Ornithogalum Squilla (the Officinal Squil), which is said to be poisonous to several animals? Information on this point is required.—P. Babe.

Roses in Bouquets.—At a recent horticultural show I was an exhibitor in a class worded in the schedule as follows: "For the best Bouquet of Greenhouse Flowers." Would the judges be considered justified in disqualifying a bouquet on the ground that it contained a Rose or Roses?—Constant Reader.

Viola Ardwell Gem.—This is a clear yellow variety, which is exceedingly dwarf; indeed, it literally creeps along the ground, and the flowers, which are produced in profusion, are thrown well up above the foliage. For bedding purposes it is all that could be desired.—W. Paul, *Paisley.*

THE ROOKS AND ROOKERIES OF LONDON.

By Edward Hamilton, M.D., F.L.S.

With the exception of the ubiquitous house sparrow, no birds frequenting our London parks and trees are so familiar to us as our black-coated friends the rooks, or, as they are commonly but erroneously called, crows. Winter and spring, summer and autumn, they may be seen stalking about searching for food, confident in their security, claiming friendship with man, yet wary withal, for they never allow too near an approach. Never disturbed by crow-boy or gun, their progeny protected, and allowed to gain maturity, no rook-shooting parties to molest them, they are happy in the dust and turmoil of this overgrown city.

The rook, indeed, is to the citizen what the nightingale is to the countryman—the harbinger of spring; and there are few pleasanter sounds in Nature than the harmonious cawing from the lofty Elm which greets the ear at Eastertide. We never pass beneath a rookery in early spring, or listen to the distinct voices of our sable friends without being reminded of Longfellow's lines in "The Birds of Killingworth":—

Do you ne'er think what wondrous beings these?
Do you ne'er think who made them and who taught
The dialect they speak, where melodies
Alone are the interpreters of thought?
Whose household words are songs in many keys
Sweeter than instrument of man e'er caught!
Whose habitations in the tree-tops even
Are half-way houses on the road to heaven!

Alas! the rooks and rookeries so pleasant to old Londoners are gradually diminishing and disappearing, and the London rook, to our grandchildren, will be a bird of the past. The cause is not far to seek. The extension of buildings limits their feeding ground, and they have farther and farther to go to seek sustenance for themselves and their young. The parks are now so cut up with walks and so frequented, that the birds can find but little repose and but scanty subsistence. When the writer first came to London the Elms in Hyde Park and Kensington Gardens were in the finest condition. Herds of fallow deer frequented the glades, and there was only one walk across Hyde Park from where the Marble Arch now stands to the Wellington Statue. All the rest was luxuriant Grass, affording abundant food for birds and beasts. "Tempora mutantur!"

Beginning westward, the first rookery to notice is that in the grounds of Holland House, one of the most ancient in the land. The trees bordering the high road were formerly covered with nests; now there are only four, and thirteen more in the avenue. In the days when Addison wrote, and in later days, when Sheridan, Jeffery, Byron, Brougham, Lyndhurst, Tom Moore, Macaulay, and a host of other wits and celebrities passed under that grand avenue to the splendid hospitality of that glorious mansion, the rookery was in its prime. Those great names are reminiscences of a great time in England's history, and are now of the past, and so soon will be the rooks and the rookery.

A colony of rooks has existed for many years in the high trees in the north part of Kensington Gardens. This rookery, in 1836, extended from the Broad Walk near the Palace to the Serpentine, where it commences in the Gardens, and there must have been very nearly one hundred nests. The rooks were very busy and their voices very merry when our present gracious Queen first saw the light in the south-east apartments of Kensington Palace, on May 24, 1819; and their descendants were as merry and as busy when her Majesty held her first Council on her Accession, in that same Palace, on June 28, 1837. Even now the younger scions of our royal family can hear the "caws" of the old and the feeble cries of the young rooks, descendants of the old colony, now, alas! reduced to thirty-one nests, and confined to a few of the upper trees skirting the Broad Walk near the North Gate.

A few years ago a pair of rooks took possession of the Plane tree in the grounds of the Deputy Ranger of Hyde Park. The colony increased, and numbered ten nests in 1870; dwindled again to two in 1874; increased to seven in 1877; and again diminished to two in 1878. Some new buildings have been erected close by; this may be the cause of the diminution at the present time.

A rookery formerly existed in the Green Park, in the Elm trees at the end of the garden belonging to the Green Park Lodge, the residence (if my memory serves me) of the late Princess Amelia. When the lodge was pulled down some of the trees were also destroyed and the rooks all left. The rookery in Chesterfield Gardens then existed, but I think about this time the nests in Wharncliffe Gardens were commenced, and (as I suspect) by the rooks from the Green Park which migrated from those trees.

If the great Lord Chesterfield could revisit the scene of his greatness here on earth, what would he see? His house remains, it is true, but in what desolation! The garden, described by Beckford as the finest private garden in London, entirely destroyed and covered with modern mansions; the stately Elms, with their sable inhabitants all gone; the beautiful colonnade in the courtyard demolished; nothing but the mansion left, despoiled of all its beauty and significance! In those old Elms above that old bulging wall in Curzon Street there were, in 1846, close upon fifty nests, and two in Lord Wharncliffe's garden. Now the trees are all gone and the rooks too. The colony in Wharncliffe Gardens has increased from two to ten nests, which are at present confined to three or four Plane trees behind the mansion. A year or two ago there were a few in the trees in the outer garden.

In 1875 a rook's nest was built and the young hatched in a tree at the back of Hereford Square, Brompton. The following year the birds returned with others, and ten nests were built in the fine Elm and Plane trees there, thus establishing a fine colony.

A rookery formerly existed in the trees in the gardens of Carlton House; but this was destroyed in 1827, when the trees were cut down and the old house demolished, when the rooks emigrated to a plantation at the back of New Street, Spring Gardens.

In the gardens of Brunswick House, in the New Road, opposite Devonshire Place, a colony of rooks has been established for some years. I find from my notes that in 1840 there were twenty nests in the Plane trees of Brunswick House, and five in the trees overhanging the New Road. In 1858 (an extraordinary mild season), on January 23, rooks were building, in the Plane trees of Brunswick House, fifteen nests. In 1876 I counted seventeen nests. This year, on April 15, fifteen nests, which now occupy only three of the Plane trees nearest the Regent's Park. The tree overhanging the New Road is untenanted, although in 1875 it contained a single nest.

In some Plane trees in a garden on the east side of Gower Street are three rooks' nests, and two others in a Plane tree in the garden of No. 5, Gordon Place, Gordon Square.

There was formerly a considerable rookery in the Temple Gardens, in the Elms in the King's Bench Walk. When they ceased to build there I cannot ascertain exactly. One of the porters tells me that he has been in the Temple, man and boy, between forty and fifty years, and he cannot remembar any rooks or nests there. In Goldsmith's time it was a flourishing colony. In his "Animated Nature," printed in 1774, he says:—

> The rook, as is well known, builds in woods and forests in the neighbourhood of man, and sometimes makes choice of groves in the very midst of cities for the place of its retreat and security; in these it establishes a bond of legal constitutions, by which all intruders are excluded from coming to live among them, and none suffered to build but acknowledged natives of the place. I have often amused myself with observing their plan of policy from my window in the Temple that looks upon a grove where they have made a colony in the midst of the city. At the commencement of spring, the rookery, which during the continuance of winter seemed to have been deserted or only guarded by about five or six, like old soldiers in a garrison, now begins to be once more frequented; and in a short time all the bustle and hurry of business is fairly commenced; where these numbers resided during the winter is not easy to guess, perhaps in the trees and hedgerows to be nearer their food. In spring, however, they cultivate their native trees; and in the places where they were themselves hatched they prepare to propagate a future progeny.

The birds whose habits are thus so graphically described must have been in the height of happiness, and in the bustle of their business, when poor Goldsmith was on his deathbed, and their voices may have been his funeral requiem when he was placed in his grave in the Temple burial-ground, on the evening of Saturday, April 9, 1774, almost overshadowed by those Elm trees—

Where the bat circled, and the rooks reposed,
Their wars suspended and their councils closed.

Twenty-five years ago the rookery in College Gardens, Doctor's Commons, still existed. Hone, writing of it in April, 1826, in his "Every Day Book" (vol. i., p. 494), has the following anecdote concerning it:—

> Amongst the deliramenta of the learned, which have amused mankind, the following instance merits a particular rank. Some years ago there were several large Elm trees in the College Garden behind the Ecclesiastical Court, Doctor's Commons, in which a number of rooks had taken up their abode, forming in appearance a sort of convocation of aërial ecclesiastics. A young gentleman who lodged in an attic, and was their close neighbour, frequently entertained himself with thinning this covey of black game by means of a crossbow. On the opposite side lived a curious old civilian, who, observing from his study that the rooks often dropped senseless from their perches, or as it may be said, without using a figure, "hopp'd the twig," making no sign, nor any sign being made to his vision to account for the phenomenon, set his wits to work to consider the cause. It was probably during a profitless time of peace, and the doctor, having plenty of leisure, weighed the matter over and over, till he was at length fully satisfied that he had made a great ornithological discovery, that its promulgation would give wings to his fame, and that he was fated, by means of these rooks, to say, *Volito vivus per ora verum.* His goosequill

and foolscap were quickly in requisition, and he actually wrote a treatise stating circumstantially what he had himself seen, and in conclusion giving it as the settled conviction of his mind that rooks were subject to the "falling sickness."

Few people, save lawyers and their clients, ever visit one of the quietest precincts in the city of London, viz., Gray's Inn. Turning out of noisy Holborn or Gray's Inn Lane, the most perfect stillness suddenly prevails; another city seems to have arisen; quiet alleys and paved courts shut out the noise of the busy world; a solitary footstep—made still more solitary by its echo—breaks upon the ear. Can this be in the midst of London? Even so, and in that great square the chief noise is the "caw" of the rooks.

In the gardens of Gray's Inn may still be seen the largest rookery in London. How long it has been established I have not been able to ascertain. The Elm trees were planted by Lord Bacon. It was probably coeval with that of the Temple, and probably increased when the Temple rookery was abandoned. Six years ago there were thirty-eight nests. Two years later some of the trees were blown down, others were cut down, and the rookery was nearly annihilated; a few nests only remained on some Plane trees. The gardens having been kept very quiet, and all noisy children excluded, the rooks are returning, and this year, on April 28, there were twenty-eight full nests with birds sitting, and four unfinished. On going round the garden I was informed that every morning one of the residents feeds the rooks, and that often as many as eighty birds have been counted. Now as twenty-eight nests will only give fifty-six birds, the rest must come from a distance—probably the birds of a former year. Let us hope, from the care taken, that this rookery will long flourish and increase. The gardens are beautifully clean, and the birds as glossy as if they had made their nests 100 miles from this smoky city.

For some years a pair of rooks built their nest in the Plane tree at the corner of Wood Street, Cheapside. I have notes of this in 1835, 1836, 1837, and 1838. Yarrell says that they did not use the nest after 1836, but this is a mistake. Probably these birds were the same who built their nest previously on the Dragon of Bow Church spire. Mr. Harting, in his "Birds of Middlesex," states that in 1845 there were two nests in this tree. I have no record of this circumstance. The same author states that in 1838, a pair of rooks made their nest on the crown which surmounted the vane of St. Olave's Church, Crutched Friars.

I know of no rookeries further east in London—that is, London proper—for we must exclude the outlying districts from our limits.

There used to be some rooks' nests in the burial ground of St. Dunstan's in the East, in Tower Street; and in 1876 a pair of rooks took up their quarters and built their nest in Bermondsey Churchyard.—"Zoologist."

Large Peach Tree.—A Peach tree at Sunbury Park measures 22 ft. by 22 ft., equal to 484 square ft. Suppose we allow an average of eight fruit to a square foot, the result would be 3872, or 322 doz. Peaches. An Elruge Nectarine in the same house covers 225 square ft., and carries 150 doz. splendid fruit. The trees are about fourteen years old, and perfect specimens of good cultivation. In the same range there are two large Vineries, the crops in which are equally good.—J. F.

A Double Edelweiss.—The allusion to the Edelweiss in The Garden (Vol. XIII., p. 588) reminds me of a very interesting novelty cultivated (only a few plants) in the Imperial Botanic Garden at Innsbruck, viz., a double Edelweiss. I have seen a flower of it; it is very beautiful, and, as the single flower is so much prized (it is the club mark of the German "Alpenverein"), the double form will be of great interest. I am astonished to see from the remarks in The Garden that the Edelweiss is rather difficult to grow in England. Here it is of the easiest culture; indeed, almost a weed.—T. Forster, *Augsburg, Bavaria.*

Table Decorations at Tunbridge Wells.—At a recent show held here, table decorations formed a prominent feature. They exhibited much taste as regards arrangement, and the wild flowers with which some of the centre pieces were filled had a better appearance than if the most costly stove plants had been employed. This is a point worthy of special notice, as the flowers used are within the reach of all, and the result is an increase of what may be called a more refined taste. Hand bouquets were also shown in profusion, and prettily made up many of them were. Matters such as these well deserve encouragement.—G. Brush.

OBITUARY.

Lewis Solomon, one of the best known of Covent Garden fruit merchants, died at Folkestone on the 2nd inst., at the age of sixty-three. His knowledge of fruit was most extensive and accurate, and in times gone by he often filled the office of judge at fruit shows both at Chiswick and at the Crystal Palace. He was well known and much respected.

SOCIETIES AND EXHIBITIONS.

ROYAL BOTANIC SOCIETY.

June 10.

Although some think there are too many flower shows now-a-days, we are pleased that the Botanic Society have this year returned to their old plan of having a third summer show, at which fruit is an important feature. This course is desirable, not only because such a society ought to fairly represent fruit among its exhibitions, but also for the sake of prolonging the season of these very pleasant meetings in a garden universally admitted to be so well suited for them. Roses and other cut flowers and fruit formed the main attractions this time; and although the large plants were absent, there was a very good meeting and many excellent Roses shown, the chief prizes falling to Mr. George Paul, whose immense baskets of Roses were much admired. Any plan that gets away from the ordinary straight box-way of showing the fairest of flowers is welcome. Mr. Paul's way in this case was to fill an ordinary circular packing basket, about 5 ft. across and 1 ft. deep, with Moss or other light material, and then plant it all over with superb cut Roses, sometimes one huge basket of a kind, sometimes a variety of kinds in groups. Mr. George Paul also had a very interesting collection of climbing Roses. We believe that the beauty of climbing Roses has never (owing to the general practice of mutilation under the name of pruning) been fairly represented in our gardens; and though they can be only very poorly represented at a flower show, they nevertheless deserve to be more often seen at shows. Their heads of abundant blossoms are welcome after the single blooms of the show kinds. Among new large-flowered Roses which have become standard kinds, we may mention M. Liabaud and M. E. Y. Teas. These will stand the test time which is so fatal to many new Roses. Messrs. Cranston showed many Roses of great size and beauty. Mr. Turner's two new and beautiful Roses, Harrison Weir and Penelope Mayo, were there and much admired. Mr. Turner had also a very interesting group of yellow Carnations, of which too rare and delicate race a fine vigorous batch has recently been raised at Slough.

Among the cut flowers, those of British plants were, as usual, a failure, owing to stiff arrangement and similarity in the groups. In the interest of the flora of a country, it is not desirable to offer prizes for the greatest variety of wild flowers, because this tends to the extermination of the rare kinds; it is equally injudicious as regards effect. It would be better to give prizes for effective and simple arrangement of the more beautiful and graceful of the easily-obtained native flowers and Ferns. Then we might get away from the "besoms" now so often seen. There is more beauty in a single wreath of wild Rose than in scores of those crammed bunches. There was some improvement in exotic cut flowers, but in this case also stiff bad arrangement was the rule—a striking exception being the collections of cut flowers shown by Mr. Morse, of the Original Nursery, Epsom.

The unusual calls on our space this week prevent us saying more of the fruit than that it was in many cases excellent, and that a detailed list of the prize-winners will be found in our outer sheet. Mr. Douglas showed a fine basket of a quite smooth Tomato (Vick's Criterion), which is as smooth as a Nectarine, but whether the fruit will be any better in consequence we cannot say.

ROYAL HORTICULTURAL SOCIETY.

PROVINCIAL SHOW AT PRESTON, July 10, 11, 12, & 13.

This great show opened on Wednesday last under favourable circumstances as regards weather. A more suitable place to hold a flower show could hardly have been selected than the Preston Nursery and Pleasure Gardens, for. in addition to being attractive in themselves, the surrounding country, with its beautiful scenery, added much to the enjoyment of visitors. The principal tent consisted of three spans, and covered a large space of ground, thrown into a series of banks and undulations. A miniature lake occupied the centre, in which were placed Tree Ferns, and on a series of round plots of turf on each side were placed groups of Orchids, Dracænas, and Ferns alternately, which had a good effect. The banks round the tent were occupied by stove and greenhouse and fine-foliaged plants. Groups of specimen zonal Pelargoniums gave colour to the show. The arrangement of the plants as regards general effect was in every way satisfactory — a remark, however, that does not apply to many of the minor details. Lord Aberdare, in opening the show, hoped that it would be a success, not only from a financial point of view, but from that of diffusing a wider taste for the cultivation of flowers amongst people generally.

Flowering & Fine-foliaged Plants.—On entering the tent, on the left was a fine bank of these from Messrs. Veitch & Sons. Amongst these were noticeable the new hybrid Zygopetalum Sedeni (with rich chocolate-petaled flowers and bright purple-spotted lip), the pretty Cinnamon-flowered Saccolabium curvifolium, and several fine varieties of Aerides odoratum. Specimens of the bright-flowered Masdevallia Harryana, furnished with upwards of fifty blossoms, imparted colour to the group. Rhododendron Maiden's Blush was well flowered, and R. Duchess of Edinburgh was conspicuous for its brilliant orange-scarlet, waxy blossoms. At each corner of the collection was a fine group of Begonias, the flowers of which were exceedingly bright. These were surrounded by such fine-leaved plants as Croton Hanburyanum, Dracæna speciosa, and the beautiful Phyllanthus roseo-pictus. The bold-looking Anthurium Veitchi was remarkable for its deep green and bronze deep ribbed leaves, some of which measured nearly 3 ft. long. A plant of the variegated hardy Grass (Eulalie japonica) in this group was very effective; and Pitcher Plants, furnished with large pitchers of various shapes, together with numerous bronze, crimson, and green-leaved Sarracenias and similar plants, made up a collection of great interest. Sonerila Hendersoni marmorata, a garden hybrid from the same firm, was remarkable for its silver-coloured foliage and dwarf, compact habit. Adiantum speciosum, from Peru, had large branching fronds and bold pinnæ; and the new A. cyclosorum, from New Granada, looked like masses of silvery bronze. Asparagus virgatus, as a pot plant, was much admired, on account of its light feathery appearance and deep green colour. This collection contained, moreover, bright-flowered Gloxinias, among which were Vesuvius, brilliant velvety crimson; Patrie, a white-flowered kind with rich purple throat; and l'Univers, an unusually large, upright-flowered sort, beautifully speckled with blue, purple, and white. Disa grandiflora was here shown off to the best advantage against the white waxy-flowered Thunia Marshalli and the fine-leaved Acalypha Macfeeana. A stand of small fine-foliaged plants, covered with a bell-glass, attracted much attention. It contained miniature plants of the golden-veined Anæctochilus setaceus cordatus (one of the most beautiful of this class of Orchids), Bertolonia Van Houttei, Liparis elegantissima, and small-leaved Marantas.

Opposite this group was one from Mr. Williams, of Holloway, consisting of fine-foliaged and choice-flowering plants; amongst them were finely-flowered plants of Dipladenia amabilis on a balloon-shaped trellis; Odontoglossum Alexandræ, furnished with massive spikes of beautifully-spotted crisp blossoms; Dendrobium devonianum, and some fine Lilies. The new Croton Prince of Wales was shown better in this group than we have hitherto seen it, its long, gracefully drooping, twisted leaves being very bright. The narrow, bronze-leaved Dracæna lentiginosa was noticed as being one of the best of plants for table decoration; and the bright, rosy, purple-flowered Dendrobium Goldiei, hitherto known under the name of D. superbiens, was much admired, as was also a well-flowered specimen of D. suavissimum, and the elegant Adiantum palmatum. A panful of the lilac-flowered Lobelia Lilac Queen was very pretty, also Torenia Fournieri; and the variegated Vine, the white-leaved Habrothamnus elegans argenteus, and some new Dracænas were very showy.

Near this was one from Messrs. Rollisson & Sons, Tooting, consisting of finely-flowered Ericas, such as the white E. Aitoniana Turnbulli, E. venosa, and E. Dennisoniana; also large boxes filled with small, but profusely-flowered plants of E. Massoni major and E. tricolor profusa. Associated with these were Cattleya Leopoldi, the lemon-yellow Oncidium sessile, Aerides odoratum loaded with blossom, Lady's Slippers, and fine-leaved Dracænas.

In a miscellaneous group of plants from the Preston Nursery Company were good examples of Gymnogramma decomposita, the white-leaved Phyllanthus nivosus, the yellow Croton volutum, C. Queen Victoria, Adiantum scutum and A. Farleyense, Lomaria gibba, with a stem 4 ft. long, and finely-grown plants of Cocos Weddelliana.

New Plants.—Of these Mr. Bull had a collection, among which the most striking were Dieffenbachia Shuttleworthi, a plant of excellent habit with glossy green, pointed leaves, and a band of silvery-white down the mid-rib; Lomaria discolor bipinnatifida, a beautifully crested kind; a red-veined Alocasia named A. Johnstoni; a pretty cut-leaved Artocarpus named exsculpta; and the lace-like Davallia fijiensis. Associated with these were also Philodendron Carderi, Dracæna Bijou, Croton formosum, Anthurium insigne, Zamia princeps, Dieffenbachia Leopoldi, Adiantum princeps, Dracæna Goldieana, Bowenia spectabilis serrulata, and Ixora regina.

Messrs. Rollisson showed in this class Dracæna vivicans, a narrow-leaved variety, bright bronze and rosy-crimson in colour; D. Smithiana, a bold looking plant with broad, glossy green leaves; the graceful Grevillea filicifolia; a pretty little Tree Fern called Alsophila Imrayana, Anthurium Warocqueanum, and a new Stag's-horn Fern.

Mr. Williams had Croton Queen Victoria, the fine table plant Panax laciniatus, the new Dracæna Goldieana and Berkeleyi, Croton Prince of Wales, and Dendrobium suavissimum.

Among new plants exhibited for Mr. Bull's cups, the most striking were the black-leaved Artocarpus Cannoni, the fine Fern named Anemidctyon Phyllitidis tessellatum, a brilliantly-coloured Croton called C. princeps, a distinct Acalypha marginata with green and bronze leaves edged with deep rose, the double yellow-flowered Hibiscus rosa-sinensis Colei, a fine Aralia named filicifolia, evidently very suitable for dinner-table decoration, Panax laciniatus, and Brahea filamentosa.

Stove and Greenhouse Plants.—Mr. T. M. Shuttleworth, Preston, furnished probably the most extensive and best grown collection of these ever before exhibited by an amateur grower. It consisted of nearly seventy gigantic specimens of flowering plants. It contained Allamanda nobilis, Ixora Crosseana, the white-flowered I. Colei covered with blossoms, and the brilliantly-coloured I. coccinea superba. Statice profusa and S. imbricata were probably never seen so well flowered as they were in this collection. It also contained a fine specimen of Lapageria alba covered with blossoms. The brilliant Dipladenia Brearleyana was very conspicuous, and the blue Plumbago capensis could be seen from every part of the tent. Among fine-foliaged plants were massive specimens of Davallia elegans, D. Tyermani, D. Mooreana, and fine balloon-shaped plants of Paullinia thalictrifolia. Gleichenia Speluncæ was represented by a specimen fully 9 ft. through, the fronds being remarkably strong, and the leaves beautifully green, without spot or blemish. G. rupestris and G. microphylla represented massive mounds of elegant foliage. These were associated with vigorous plants of Cordaline indivisa, the fan-leaved Pritchardia pacifica, Cycas revoluta, the fine basket Fern, Nephrolepis davallioides, fine-leaved Crotons, Aralias, and Cocos Weddelliana. The background consisted of grand specimens of the Weeping Tree Fern, Cibotium Sieboldi, Cyathea Burkei, Cycas circinalis, and similar plants.

Of twelve stove and greenhouse plants, an excellent collection came from Messrs. Cole & Son. It contained good plants of Erica tricolor Wilsoni superba, E. retorta major, and the white E. Shannoni; the white Ixora Colei, a finely-flowered Stephanotis, Allamanda cathartica, and A. nobilis. In other collections were finely-flowered plants of Franciscea calycina major, the scarlet-spathed Anthurium Scherzerianum, the orange and cinnamon-coloured Ixora amboynensis, and a specimen of Dipladenia amabilis bearing scores of brilliant rosy-pink flowers and buds.

In a group of miscellaneous plants from Messrs. F. & A. Dickson, of Chester, we noticed fine examples of the broad, bronze-leaved Dracæna Taylori, variegated Pines, and fine-leaved Crotons.

In open classes for sixteen stove and greenhouse plants, in or out of flower, there was considerable competition, and by the flowering plants being mixed up with those distinguished for fine foliage, a better effect was produced than when the two classes of plants are arranged separately. The best group contained a large specimen of Allamanda grandiflora completely covered with blossom, which was shown off to advantage between a finely-grown plant of Gleichenia hecistophylla and the rosy-flowered Erica Parmentieri rosea. A specimen Anthurium Scherzerianum was furnished with upwards of thirty large brilliant spathes, and Clerodendron Balfouri was a mass of blossom.

Fine-foliaged Plants and Ferns were but sparingly shown. Among them were several fine specimens of Cycas revoluta, the white-veined showy-leaved Anthurium crystallinum, and the elegant feathery-leaved Lomatia silaifolia.

Ferns, which occupied a large sloping bank, were numerous. Amongst them were fine plants of Gleichenia rupestris, G. Mendelli, the fine lace-like Pteris scaberula, golden Gymnogrammas, fine plants of Davallia Mooreana and Stag's-horn Ferns; also the Australian Bird's-nest Fern. We noticed that many of the plants were grown in shallow tubs with handles attached to them, a way in which they are more easily moved from place to place than when in pots.

Orchids.—The best came from the London nurserymen. Mr. B. S. Williams, Holloway, showed finely-flowered specimens of Cattleya Mendelli and C. Leopoldi, Cypripedium barbatum speciosum, the beautiful white C. niveum, and the brilliant Epidendrum vitellinum majus. A plant of Dendrobium formosum giganteum was well furnished with flowers, and D. Bensoniæ was a mass of bloom.

Messrs. Rollisson & Sons had finely-flowered plants of Cypripedium Parishi, the curious Odontoglossum hastilabium, a fine variety of the showy Oncidium macranthum, and a large panful of Cypripedium niveum.

In the amateurs' collections were grand plants of Dendrobium nobile, Cattleya Warneri, and the yellow and cream-coloured Dendrobium Schroederi; and several good Lady's-slippers were also shown; and we likewise noticed a finely-flowered plant of Aerides Lobbi Ainsworthianum, the colour of which was unusually bright and attractive.

Of Begonias the best came from Messrs. Laing & Co., Forest Hill, who had well-grown plants of F. M. Dos Santos Viana, a bright cinnamon-yellow-flowered sort, with dark velvety-bronze leaves of the Pearcei type; Corail Rose, a fine rose-coloured flower of fine form; Gloire de Nancy, dwarf in habit and completely loaded with bright scarlet flowers as double as those of a Hollyhock; La Baronne Hruby, rosy-crimson; and John Laing, salmon.

Dracænas were shown in good numbers; they were arranged in isolated groups with excellent effect. Among the best kinds were D. Baptisti, a robust sort with rich bronze leaves edged with bright salmon and rose; D. Gladstonei, a variety with dark, broad, recurved leaves; and D. regina, green and yellow. Messrs. Rollisson & Son, who had the best group in the exhibition, showed D. amabilis, D. Goldieana, D. Guilfoylei, D. terminalis alba, D. Gladstonei, D. Salmonea, and other fine kinds.

Cut flowers were shown in large numbers, especially in the shape of bouquets, none of which, however, were worthy of special remark. Pansies from Messrs. Downie & Laird attracted much attention on account of their bright and varied colours.

Roses were beautifully fresh and fine, and there was the best display, as regards colour, size, and quality of bloom, which we have seen this season. Among good kinds in the first prize collection were Marguerite de St. Amand, Baroness Rothschild, Annie Wood, grand blooms of Mdlle. Marie Rady and Prince Camille de Rohan. Charles Lefebvre was probably never shown finer than it was on this occasion. Messrs. Cranston, Hereford, who had an extensive collection, showed boxes of Louis Van Houtte, which were highly commended on account of the size, and rich crimson-scarlet colour of the blossom. It is one of the best dark Roses we have seen this year. Marie Baumann was in equally good condition.

In the whole of the collection, which consisted of more than twenty stands, there was scarcely a bad bloom, and more attention was directed to this part of the show than to any other. The blooms were arranged for effect, and this was gained by giving them room, and by their having plenty of foliage surrounding them. They were awarded a silver medal. Mr. Prince, Oxford, showed Roses grown on the seedling Brier, fine both in form and colour.

Of Crotons there were several fine collections, and being arranged on sloping banks they formed a striking feature. Among those of the C. angustifolium type, the most remarkable were C. Johannis, C. majesticum, and C. interruptum. Among those of the pictum and variegatum types, the best were C. undulatum, C. Wiesmanni, and C. Queen Victoria. The curious C. pecturatum, with its pendent leaves, attracted much notice; those with tri-lobed leaves were well coloured and distinct.

Of Heaths there were only two collections, the best plants in which were Erica ampullacea, E. Aitoniana Turnbulli, E. obbata, and E. Williamsi, white kinds; E. ferruginea, E. Paxtoni, and E. Massoni major, reds; and the yellow E. Cavendishi.

Fruit occupied a large tent specially provided for it. In the competition for Messrs. Veitchs' prizes offered for collections of ten varieties of fruit, Mr. Coleman was first with fine examples of Black Hamburgh Grapes, large both in bunch and berry, and finely-coloured, beautiful clean examples of Muscat of Alexandria, which, however, were hardly ripe; large Royal George Peaches, Black Circassian and Bigarreau Cherries, Eastnor Castle Melon, and very fine fruit of Oxonian Strawberries, brown Turkey Figs, and a Queen Pine-apple. In the competition for six kinds Mr. Bannerman, gardener to Lord Bagot, had good Elruge Nectarines, Royal George Peaches, a finely netted Reed's hybrid Melon, and Muscat of Alexandria Grapes. The same exhibitor had also the best Muscat of Alexandria Grapes, which, though shown in good numbers, were, as a rule, unripe. Nectarines and Peaches were well shown and in good numbers; the best dish of the former was Elruge and the best Peaches Bellegarde. Black Grapes were of average quality, but in many cases they were wanting in colour. The best three bunches (each of which weighed some 2 lb. or 3 lb.) were of fine form, and the berries were large and black and covered with a beautiful bloom. Pine-apples consisted chiefly of Queens of medium size and well ripened. Melons were numerous and good; the best was a green-fleshed Golden Queen, the next Conqueror of Europe and Eastnor Castle. Strawberries made a fine display, being large and clean, but they appeared to have suffered from wet. The kinds which won the first prizes were British Queen, Oxonian, Frogmore Late, President, Cockscomb, and Dr. Hogg.

Vegetables.—These were shown largely. Mr. Miles had the best collection, consisting of Stamfordian Tomato, Canadian Wonder Bean, Culverwell's Telegraph Pea, Bailey's Selected Cauliflower, and Excelsior Potato. The best Cauliflower was Early London; the best Bean, Seville Longpod; and the best Tomato, Stamfordian. Peas made a good display; the finest looking kinds were Culverwell's Telegraph, Laxton's Superlative, Laxton's Supreme, and Ne Plus Ultra. Potatoes were well shown; the best Kidneys were Mona's Pride, Veitch's Ashleaf, and Snowflake; and the best rounds, Porter's Excelsior, Rector of Woodstock, and Schoolmaster. Classes were provided for Tomatoes and Cucumbers, which brought forth a fine display. Salads were comparatively poor.

Miscellaneous Exhibits.—Messrs. Little & Ballantyne showed a weeping Wellingtonia, which seems likely to prove a valuable addition to choice Conifers. Mr. Pearson showed a collection of Pelargoniums of the Echinatum type, and first-class certificates were awarded to the following kinds, viz., Beauty, Ariel, and Pixie. Messrs. Cowan contributed remarkably fine examples of pot Vines grown from eyes this season.

A list of prizes awarded on the occasion will be found in our advertisement columns.

Table Decorations.—In the report of the fête given the other evening in the Royal Botanic Society's Garden we omitted to state that Messrs. John Mortlock & Co., of Oxford Street, secured two first, one second, and a special prize for table decorations, viz., one first prize for buffet decorations, one first for an epergne dressed with fruit, &c., and one second for a fireplace; also a special prize for three very pretty stands for fruit, &c. Other decorations were also highly commended.

No 348.] SATURDAY, JULY 20, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

DINNER TABLE DECORATION.

I DO not agree with "J. S. W." on this subject. I do not see how one can compare two so entirely different things as flowers and roast beef; one might just as well compare a butcher's shop with a drawing-room. It is not now the fashion to put any dishes on the table at dinner, everything being helped from the sideboards; and, in spite of what "J. S. W." says about the lady and the Thyme, I venture to assert that flowers are just as suitable for the dining-room as they are for the drawing-room or boudoir. And as for people not "deigning" to notice the flowers and plants on the table until they have finished their dinner, generally almost the first remark that people (especially the fair sex) make when they sit down to dinner is, "How beautiful the flowers are!" or words to that effect. People who do not care about flowers on the table are generally those who care for nothing but eating and drinking, and who at dinner never find time to speak a word to anybody, or give a look at anything beside their own plate, and, I presume, would prefer a table only decorated with plates, knives, and forks to one adorned with Nature in one of her most beautiful forms. I don't see why the fashion of table decoration should go out of the "upper grades of society" because it happens to be made use of at school teas and among the lower grades. It is getting quite common among the lower classes of society for every one to keep a piano, but I should fancy that "J. S. W." would very much object to give up his own on that account. I am sure that if there were to be no table decoration it would be a great loss to the ladies, as one of the pleasures of a dinner party is the exercising of their ingenuity and good taste in arranging the table and decorating it with flowers and plants in the way that will look best. I suppose that, as "J. S. W." prefers a table only covered with eatables and drinkables, he will regret that he is obliged to leave uneaten the plates, &c.; and that as he dislikes anything to distract his attention from eating, he would rather use a perfectly plain white dinner service than one of the beautifully painted sets that are made now-a-days. F. R. H. S.

—— It certainly speaks volumes for your candour and impartiality to allow a diatribe against the use of flowers on the dinner-table to appear in THE GARDEN; but I regret to see it nevertheless, as I cannot but regard such a letter as a retrograde movement in civilization. Why should dining-room table decoration be an incongruity? be indefensible, unnecessary, or a depravation of luxury? Does your correspondent assert that it is so because it tends to divert the mind from the all-important business of dining? If that be so, it would be no great stretch of his argument to assert that all dining-room decoration should also be annihilated, and that all pictures, plate, and ornaments of every kind should be banished, and the room be made as naked and uncomfortable as possible. One's mind recoils from such an idea. Just fancy a room with a carpet (even if the argument would allow a carpet), but no pattern thereon, equally plain walls, and a table with only the necessary number of plates, knives, and forks. What would become of the designs in the damask tablecloth and napkins? Surely they are also an incongruity, and could not be allowed, and the glass would be destitute of crest or cutting to match—nothing whatever to impede the dinner! The "sturdy old English gentleman" would have a fine time of it, and his dinner could proceed without any "protest" at all. But I maintain that, unless very much overdone, the use of flowers at meals is no incongruity, but a very material help to rendering the meal agreeable and healthful—as giving pleasure to the eye and the higher senses, affording a charming subject for conversation, and so, I verily believe, assisting a healthy digestion. A well-laid dinner-table will have no flowers on it that will incommode the guests; but why the use of flowers is to go out of fashion and be vulgar, because the vulgarity of some people makes them overload their tables, is more than I can see; and it would be no more absurd to prevent your son from learning to read or wear a hat or shoes because the lower orders did so than it would be to banish flowers from the dinner-table because they were in vogue in the servants' hall or were used at school treats.—J. L.

—— I have read with much interest "J. S. W.'s" remarks (see p. 25) on this subject, and I feel very strongly that those who entertain his views are much to be pitied, since the fashion of the present day shows so little consideration for their feelings. It is beside the mark to talk of artistic taste when a steaming, savoury sucking pig stands before us. No doubt there is nothing in its way to compare, for effect on a dinner-table, with a silver soup tureen, balanced at the other end by a grand cover which hides a fine bit of fish; and then four flat, covered, silver, quadrangular basins, containing made dishes of cooked-up meats, and surrounding an iced plum cake covered with the flags of all nations. It is under such circumstances alone that the worthy entertainer can say, "You see your dinner." It is only under such circumstances that one has any chance of seeing the beautiful designs on the table-cloth, or that a clever waiter has an opportunity of so spilling the gravy as to make a map of Australia or of some other recognisable island. What are a few paltry flowers which any one could stick into a bowl compared with such a display as this? I can tell "J. S. W." how he can quickly put an end, as far as he is concerned, to all "this table decoration business," this "depravation of luxury," this "indefensible, unnecessary incongruity." Let him use in his table vases several blooms of Lilium auratum and Arum Dracunculus, with some elegant Aristolochias (in flower) hanging over and twining round the glass stems of the vases; and let his flat decorations consist of Stapelias, their lovely chocolate and black blossoms being set off by close proximity to the delicate white cellular tissue of Phallus impudicus, garnished with the leaves of crisped Tansy slightly bruised. If this does not release him from all trouble in the matter of floral table decoration, at once and for the future, I'll eat him.—W. T. T.

—— The remark (see p. 3) that table decorations do not seem to be improving is calculated to give us hope that they will be done away with altogether. This would be the best improvement that could be effected. I have certainly had very little to do with dinner table decoration, but I think that flowers used so much on dinner tables is a vulgar practice which will very soon go out of fashion. If people will have decoration let it be on sideboards or in vases. I used to have to decorate a dining room in Paris where nothing was used but fruiting plants, and if we had none in fruit no other plants were used; but there is such a variety of fruiting plants in the way of Oranges, Pines, and even commoner plants, that something fruiting may be had all the year round. In winter hardy berried plants might be used on the candelabra.—H. K.

MESEMBRYANTHEMUM EDULE HARDY.

THIS is one of the noblest of the almost innumerable family of Fig Marigolds. The merits of the Mesembryanthemum for the summer decoration of rockwork have been long recognised, and justly; for what with their endless diversity of form, power of resisting the most intense drought, and the metallic lustre of their gorgeous flowers—white, orange, rose, pink, crimson—they have few equals for that purpose. Nevertheless, Fig Marigolds are too little appreciated. They are children of the sun; and a rockery devoted solely to a collection of them, in an open, sunny spot, is a sight worth seeing, and one which can only be compared to a pyrotechnic display of variously coloured fire. A situation where the soil consists of little else than sand and gravel suits them perfectly. The species with which I have headed these remarks is, perhaps, one of the boldest-looking and most striking of the whole family. Its massive, prostrate stems and large, fat-looking leaves ramble about in all directions, something after the manner of the New Zealand Spinach (Tetragona expansa)—just the plant to ramble and sprawl amongst blocks of stone, where a Nettle or a Thistle could not possibly live; and, owing to the very great weight of its succulent leaves and branches, it would be just the plant for a vase in a windy, exposed situation. It is perfectly hardy; indeed, it is scarcely known how very many of this almost innumerable family are truly hardy—perhaps upwards of a hundred would be found to survive our winters. Amongst the limited number which I have grown, the following are hardy, viz , M. cuneifolium, edule, Taylori, acutangulum, glaucum, foliosum, and others. Those who possess a large collection should turn the whole out on banks or rockwork, and leave them there, taking cuttings off them yearly for next season's supply. They attain characters out-of-doors never seen in pots. The foliage of the whole family is singular and diversified, and I should say, as a massing plant, the deeply glaucous, almost silvery M. deltoides would be most valuable. THOMAS WILLIAMS.

Ormskirk.

[One of the most valuable and suggestive communications we have had respecting hardy plants. The beauty of the creeping Mesembryanthemums in countries a little warmer than our own has often surprised and delighted us, but we did not know that so many were hardy in England. What a lovely drapery for the sunny sides of old walls!—Ed.]

HARDY WATER LILIES.

Everyone knows and appreciates that queen of native wild flowers, the common white Water Lily; but my object now is to bring into notice other less common kinds, which, from their diversity of form and colour, are equally valuable. Their culture is of the simplest kind, for, if properly planted at first, they seldom give any further trouble. Where it is convenient to drain off the water, the best mode of planting the larger kinds is to make a hillock of a compost consisting of good loam and a small quantity of well-decomposed manure and river sand; on the surface of this place some large stones to prevent the soil from being removed by the water. In this hillock place the plant so that the depth from its crown to the surface of the water may not exceed 2 ft. If there be no means of lowering the water, the best substitute is to put the plants into large baskets and to sink them to the proper depth. If the bottom be of a gravelly nature the plants will not spread much, but if otherwise they should be kept within bounds, or they will soon grow into a mass which tends to considerably mar the effect, as shown in the form of isolated patches. In the case of young plants and the small-growing kinds enumerated below it is advisable to keep them in small baskets and in shallow water. There are about eighteen half-hardy Water Lilies in cultivation at the present time. The majority belong to the genus Nymphæa, and the remainder to the genus Nuphar. Of the native kinds, which need no description, there are three varieties, which are very distinct. The minor form is very interesting on account of its small size, the blossoms being but 1½ in. to 2 in. across, with the leaves small in proportion. The variety candida is a form intermediate in size between the two preceding. The rose-coloured variety (N. alba var. rosea) is a plant which has excited much interest ever since it first expanded its lovely blossoms, a short time ago in the open air at Kew, being the first time of flowering in this country. It is said to have originated in a solitary lake in Sweden, from whence it was taken to one of the Swedish botanic gardens, which is doubtless the source of the Kew plants. It is destined to become as common as the white one, and, in company with it and other aquatics, it will produce a charming effect. The North American species, N. odorata, is a very near ally to N. alba, but the most perceptible distinction between them is the larger blossoms, which measure from 6 in. to 9 in. across, and which are very sweet-scented. The veins on the under sides of the leaves are also much more raised above the surface. The flowers of this kind, too, have a decided tendency to assume a red colour, and the full development of this is admirably shown in the rose-coloured variety (N. odorata var. rosea, or N. odorata var. minor of some), as the flowers are much smaller than those of the type. It is a source of much pleasure to hear that living plants of this beautiful variety have recently been imported into this country from the North American lakes. The variety maxima differs from the type only in having larger flowers. The variety reniformis has the lobes of the leaf much rounded, so as to assume a kidney shape, but there is no difference in the flower. The type of the sweet-scented Water Lily was introduced into this country in 1786, but it is not so common now as it deserves to be. It requires precisely the same treatment as N. alba, and will be found to be quite as hardy in the southern counties. The tuberous-rooted Nymphæa (N. tuberosa) is also a native of North America, and much resembles our native kind, but differs from it principally in having tubers developed on the roots which spontaneously detach themselves from the plant, and so afford a ready means of propagation. The shining-leaved Water Lily (N. nitida) is also a near relative of N. alba, but has very shining leaves, and blossoms not so large and scentless. It inhabits the lakes and still waters of Siberia, and also the River Lena. This kind, and also the preceding, can be obtained from nurseries in which hardy plants are made a speciality. The pigmy Water Lily (N. pygmæa) is a native of China and some parts of Siberia. It is the smallest of all, having leaves not more than 2 in. across and very small flowers. It is very rare in cultivation, but I noticed it at Kew in company with other kinds. The most interesting of all the Nymphæas is, perhaps, the yellow-flowered kind N. flava, on account of its colour, as in no other sort, either tropical or temperate, is it found. I have not seen the flowers, but I am pleased to hear that living plants have just been imported into this country from N. America. The common yellow Water Lily belongs to the genus Nuphar, of which we have one species, N. lutea, which inhabits many of our lakes and slow-running rivers in abundance, and, therefore, is too well known to need description. It has a very interesting miniature variety called pumila or minima, which is found wild in some of the Highland lakes of Scotland. It is considerably smaller in all its parts than the type, and also possesses the same vinous perfume. The stranger or three-coloured Nuphar (N. advena) is the North American representative of our yellow Water Lily; it nearly approaches it in general aspect, but it may be at once distinguished by its larger size and the leaves standing erect out of the water if it be shallow. The blossoms are larger and the same in colour outside, but the cone of stamens in the centre is of a brighter red. It was introduced in 1772, and is rather common in cultivation now. N. Kalmiana, also a North American kind, much resembles the small variety of N. lutea, and is a very interesting plant to grow in company with it. There is another kind, the arrow-leaved Nuphar (N. sagittæfolia), but I doubt if the true plant is at present in cultivation in this country.

W.

Campanula nobilis.—In last week's issue of The Garden (see p. 28) mention is made of a plant with the above name, which must be an error. The plant which "S." had in view when writing his note appears to have been Campanula grandis, not nobilis. The latter has no spike, but a few large drooping bells of a dull, indescribable colour, something between dull mauve and dirty violet, and is more singular than handsome, the beauty of the flowers (what little they have) being the spotted interior of the bells. Like the Rapunculus tribe, it is weedy; what is known as C. punctata appears to be a white variety of it, and C. Van Houttei is probably an hybrid. C. grandis, the plant passing as nobilis, is totally different, and has a habit like that of C. pyramidalis; it bears a profusion of large, blue, salver-shaped flowers, and, when well managed, is even superior to C. pyramidalis, owing to its certainty of flowering. Lift the old plants in August, select the strongest, grow them on well till winter, and pot them in rich earth for conservatory decoration, and plant the remainder out in the borders. Owing to its very dense mode of growth, if not often lifted and separated, it is seldom satisfactory. A well-grown potful of this fine plant is most effective.—T. Williams, *Ormskirk.*

The Preston Show of the Royal Horticultural Society.—This is said to have been a disastrous failure financially. What else could have been expected from the selection of such a place for a national show in presence of the fact that some really great centres, where horticulture is very popular, were open to the Society? Correspondents complain to us of being charged from four to six times the usual prices for rooms in the inns, a fact which speaks sufficiently of the character of the place. In such towns as Birmingham, when similar shows were held, no such extortion was practised. The selection of such a place may have benefited a few private individuals, but not horticulture.

The American Star Grass (Aletris farinosa).—This rare and pretty hardy dwarf perennial may now be seen in flower in the Kew collection. Although not very showy, it is, nevertheless, very interesting. The leaves are lance-shaped and ribbed, and form numerous tufts, from the centre of which spring the flower-stems. The latter are from 15 in. to 18 in. high, on which are densely arranged the pure white, bell-shaped flowers, which are about ½ in. in length. The outside of the blossom is very much wrinkled, which gives it a mealy appearance; hence its specific name. It is also interesting on account of its being the only hardy plant belonging to the Blood-root family (Hæmodoraceæ). A cool and deep peat soil with partial shade seems to suit its requirements.—A.

Mr. Edmonds, of Lillie Bridge, has recently built a series of excellent span-roofed houses for Mr. W. Bull in his new nursery at Chelsea. It consists of eighteen houses, and although the building commenced not more than nine months ago, the work was so well and promptly done that the houses are already well stocked with new plants.

NOTES OF THE WEEK.

Florists' Flowers in London.—We have been surprised and pleased during the week at seeing the superb collection of Carnations and Picotees blooming in Mr. Dodwell's garden at Clapham Rise, in a crowded part of the town, and with a busy railway running by. Mr. Dodwell is perhaps the best known of any amateur florist to readers of gardening literature; he has grown his flowers with great success in various parts of the country, but never more so than in his small garden at Clapham Rise. Of course, the choicer Carnations and Picotees are bloomed in glass structures, in which, however, they are reached by the "blacks;" but a great number of seedling plants bloom in the open air in the beds in which they passed the winter. In days when success with vigorous and very ordinary shrubs in London is thought worthy of record, it may encourage many to know what one of the acknowledged leaders among florists has done with flowers known to require good culture and much care to bring them to the standard of perfection recognised by florists.

Lord Napier Nectarine.—This large and handsome fruit has recently been in fine condition in Messrs. Rivers' orchard houses at Sawbridgeworth. It is one of the most valuable of the recent gains in new fruits.

Centaurea macrocephala.—This plant is now in full flower here, in the form of large masses 8 ft. or 10 ft. wide and 4 ft. high, crowned with great golden ball-like flower-heads, which are very ornamental. It would make a good plant for the wild garden.—T. Smith, *Newry*.

Delphinium George Taylor.—This Larkspur is one of the many handsome ones now in Mr. Ware's collection. These plants, above all other hardy ones, need no praise; but they deserve to be more grown than they are, owing to their incomparable shades of blue and purple—a wondrous gift of colour, which only the humming birds share with them.

A Black Pansy.—The St. Osyth Black Pansy is a very valuable plant, and is a very rich black with a small yellow eye. It is a most useful and distinct variety, and the more particularly so from the fact that Messrs. Carter have, by careful selection for a number of years, succeeded in establishing it as a race coming true from seed. Those who know the way in which Pansies sport from seed will know how to value this quality.

Salvia gigantea.—This is one of the handsomest hardy plants in flower here. It has large, rugose leaves and partially drooping terminal spikes of pale mauve-coloured bracts, very much resembling the inflorescence of some Bougainvillea. It grows about 4 ft. high, and nearly half of that height is floriferous, making it altogether a most distinct and striking plant.—T. Smith, *Newry*. [Is it not a variety of S. Sclaræa?—Ed.]

Hardy Red Water Lily.—The Red Water Lily (Nymphæa alba rosea) is in the hands of Messrs. Frœbel & Co., nurserymen, Neumünster, Zurich, Switzerland, but whether they have as yet sent it out is more than we can say with certainty. Frœbel's plants are planted out in a lake, and they speak in the highest terms of their beauty. They say that it is worth going to Switzerland to see them. Since writing the above we see that Messrs. E. G. Henderson offer plants of it for sale.

Lobelia Omen.—This is a pretty Lobelia of the pumila type; it is a kind that does well in good soil, and, if kept moist, it will continue in flower much longer than some kinds. Its flowers are purplish-pink, a colour which contrasts well with blue-flowered sorts. Many of these, as well as that first named, may now be seen in fine condition in the Royal Exotic Nursery, Chelsea.

Dendrobium barbatulum grandiflorum.—This pretty white-flowered Dendrobe is now in flower in Mr. Bull's nursery, Chelsea. Grown on small, flat pieces of wood, its slender flower-spikes droop gracefully from the pseudo-bulbs, and its silky, white, transparent blossoms rank amongst those of the choicest of Orchids now in bloom.

A New Dendrobe.—Under the name of D. d'Albertisi we find a pretty little Dendrobe in the Holloway Nurseries. It is a native of New Guinea, and is one of four species which form a rare and distinct group of Orchids. The pseudo-bulbs at the base are round, afterwards thickening, and becoming four-sided or square, and finally tapering to a sharp point. It is a profuse bloomer, the long slender flower-stalks being emitted all the way up well-ripened bulbs. The flowers, which are small, are interesting and distinct. The petals are pure white and waxy, and the lip is striped with claret and purple, forming a pleasing contrast to the pair of narrow horn-like, green sepals with which each flower is furnished. Though by no means a showy variety, it is well worth adding to good collections of Orchids.

A Sky-blue Daisy.—Bellis rotundifolia cœrulea, now in flower, really deserves the above English name, the colour of the ray reminding one of the much admired sky-blue variety of the Wood Anemone. This Daisy is a very delicate and pretty rock plant and grows freely from seed, which is offered, we believe, in some of the catalogues.

Compass Plants.—One of these now in flower (Silphium connatum) is a very showy, Sunflower-like plant with a stately and large habit of growth. No border of the mixed type could contain such a giant, which, however, is one of those plants which first suggested the idea of the "wild garden," in which it will be found at home among the most vigorous plants. It thrives and flowers freely on the worst clay soils known to the writer.

Spiræa callosa alba.—This is a white-flowered variety of this the best of all shrubby Spiræas. Its flowers are larger than those of the type, and they last even longer in good condition. Like S. callosa, it can doubtless be readily raised from seed. It is a rapid grower, and plants of it from 3 ft. to 5 ft. through when laden with masses of white blossoms are very ornamental in shrubbery borders. We lately saw fine plants of it in Messrs. Veitch's Coombe Wood Nursery.

The White-flowered Oleander.—This is largely grown by Mr. Wills for decorative purposes. The plants, which are chiefly imported ones, are grown in a moist, warm temperature near the glass, and thus treated they make handsome bushy plants loaded with large trusses of snowy blossoms. This white variety appears to flower more freely than the rose-coloured kind, and its blossoms in a cut state are much more valuable.

Pitcher-plants at Chelsea.—The house devoted to Pitcher-plants in Messrs. Veitch's nursery will shortly be worth a visit. It contains hundreds of plants of such Nepenthes as N. Rafflesiana, Hookeri, Sedeni, intermedia, and a few of the new kind called Courti. These are laden with pitchers, now increasing in size rapidly.

A Continuous-flowering Orchid.—A well-flowered specimen of the brilliant orange-scarlet-flowered Epidendrum vitellinum majus, in the Holloway Nurseries, serves to illustrate the great value and lasting qualities of this Orchid. The plant in question was in bloom in May, and, after having been exhibited at Regent's Park, South Kensington, Manchester, Preston, and other shows, it still remains in good condition, and will, to all appearance, last for several weeks yet. Such plants as this can scarcely be too highly valued.

Ceanothus Arnoldi.—This is just now remarkably showy on a wall in Messrs. Veitch's nursery at Coombe Wood. It grows freely and yields in abundance large trusses of delicate pink blossoms. Either as a wall plant or as a bush it is one of the finest of the Ceanothuses, and might be cultivated largely with advantage.

Croton Prince of Wales.—Amongst new Crotons raised of late years few are so ornamental as this one. Its leaves, which are prettily curled and from 1½ ft. to 2 ft. long, assume a gracefully drooping habit, and are marked with the richest golden, crimson, green, and rose colours. As a dinner-table plant this Croton will, no doubt, soon become popular.

Carnations and Picotees.—A collection consisting of some of the best of these is now in flower in a greenhouse in Messrs. Veitch's nursery, Chelsea. It comprises many kinds not often seen, and all of them are of fine form and colour. A large bed out-of-doors, too, is very attractive, many of the newer as well as the older kinds being represented. The value of Carnations for border decoration is not so well understood as it ought to be, and there are now many kinds which succeed best in this way, and which, at this season of the year, produce a fine effect, as well as furnish choice flowers for cutting. —S.

Weigela amabilis aurea.—This beautiful golden-leaved form of a well-known flowering shrub is destined to play an important part in ornamental shrubberies. Its flowers are similar to those of the type, and are as freely produced, but in its golden leafage lies its chief value. For planting in large, rough shrubberies it will not be found so suitable as the golden-leaved Elder, but for introducing into small clumps of shrubs on lawns it is one of the best plants which we have seen for some time. It would also make a capital pot plant for the cool conservatory.

Spiræa palmata in Masses.—The fine effect produced by planting this Spiræa in masses is fully realised in the form of large beds of it growing under trees in Messrs. Veitch's nursery at Coombe Wood. It is in full flower, and when seen from elevated parts of the grounds is very effective. Its branching plumes of deep rose-coloured blossoms are large and fine, owing to its being planted in deep, rich, moist sandy soil. S. venusta grows rather taller than S. palmata. Its blossoms are, however, not nearly so bright in colour, but they last longer than those of palmata.

NOTES FROM KEW.

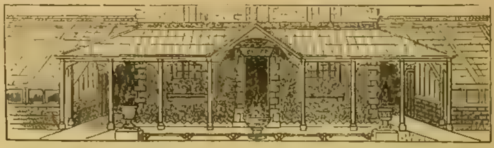
Hardy Herbaceous Plants.—Two of the most distinct and charming of the perennial Larkspurs are Delphinium cardinale and D. nudicaule; the former grows 4 ft. or more in height, and the latter about half that size, while the flowers of both are scarlet, though brightest and deepest in D. cardinale. Cimicifuga racemosa, a stately perennial from the United States, has white flowers, and attains a height of more than 6 ft.; C. Serpentaria, with greenish-white flowers, has more finely-cut leaves, and is nearly as tall as its congener. Hypericum Coris has Heath-like leaves and a profusion of yellow flowers, and is one of the prettiest of the smaller-growing St. John's-worts. Arenaria gypsophylloides viscosa—if we mistake not, one of the recent introductions from Central Asia, which we owe to the zeal and industry of the Russian naturalists—is an elegant plant about 15 in. high; the white flowers are borne in rather flat, branching panicles, and the long, pointed, narrow leaves are a greyish-green. Galega persica, an eastern member of the Pea family, is a fine plant with pinnate leaves, and grows 6 ft. or 7 ft. high; the profusion of upright racemes of pure white blossoms renders it a very interesting kind. A Continental form of the common purple Loosestrife of our river banks and marshes (Lythrum Salicaria grandiflorum) is very striking on account of the much longer spikes of larger and more deeply-coloured flowers than are possessed by any of our indigenous varieties. In L. virgatum is combined much elegance and beauty; it grows between 2 ft. and 3 ft. high, and has narrow leaves and red flowers. One of the European Willow-herbs (Epilobium Dodonæ) is a neat, compact kind about 2 ft. high; it has leaves much like those of Rosemary, and from that peculiarity its now generally accepted name, E. rosmarinifolium, has been given. With the Rosemary-like foliage are associated deep rose-coloured flowers. Pentstemon heterophyllus, 1 ft. high, produces abundantly its showy blossoms, which are purplish, with deep blue blotches on the outside of the tube. P. spectabilis, double the height of last-named, has broad leaves and long, narrow-tubed, scarlet flowers. P. Richardsonianus, with deeply-cut leaves and purple blossoms, is a good, free-flowering kind growing from 2 ft. to 3 ft. high. Campanula macrostyla, for figure of which see The Garden of September 1, 1877, is not less curious than beautiful; its large, upright, bell-shaped, dark purplish-netted flowers are very attractive, and the whole plant differs much from any other member of the genus we have seen in cultivation. A Texas perennial (Echinacea angustifolia) has foliage much like that of the narrow-leaved Rib Grass, and large, handsome flower-heads, 3 in. in diameter, borne singly on stems rather more than 1 ft. high, the long ray florets being of a deep rose colour, and those of the disc a dark blood-red. One of the finest of the Hedysarums is H. Mackenzii, a fine American species, and a recent and charming addition to British gardens; it grows about 18 in. high, and has pinnate leaves and long upright racemes of purple-pink flowers. This is a very desirable perennial worthy of a place in the most select collections of herbaceous plants. A prettier and more uncommon kind than its European relative is the American Gratiola quadridentata, a neat little plant about 6 in. high, with narrow leaves and an abundance of white flowers. Lysimachia atropurpurea, with its dark purple blossoms, is a fine sort worth growing for itself, though scarcely so beautiful as some of the other species of the genus which have already been noted. Stobæa purpurea, a handsome Composite from the Cape of Good Hope, has Thistle-like, spiny leaves, and winged, spiny stems 3 ft. in height; the flower-heads, 3 in. across, are light purple, changing to white.

Stove Plants.—Cassia glauca, an East Indian shrub, with doubly pinnate, Fern-like leaves and stalked, globular heads of white flowers, is a handsome kind and an easily-managed and useful one for the decoration of the stove or warm greenhouse. A South African bush, Bauhinia natalensis, has conspicuous flowers, pure white with the exception of a crimson vein in the centre of each of the three upper petals; this makes a pretty and compact pot plant, and does not at all resemble some of the other members of the genus, which are huge, large-leaved climbers that reach the tops of high trees in the Tropics.—†

Hardy Plant Gardens.—You must have felt great pleasure, as I have, when visiting the nurseries round London where hardy plants are made a speciality, in finding how many beautiful new species have been introduced and how many old treasures recovered. I occasionally get a hurried run through the Tooting Nurseries, Mr. Parker's, Mr. Barr's, and Messrs. Rollissons', and see interesting and beautiful plants new to me, and find that the freemasonry which happily exists among all classes of growers of hardy plants leads to an amount of attention which, as only a small customer, I could not otherwise expect. Last week, for the first time for some years, I found myself at Tottenham. It was a day to be marked with a white stone; all went well. Having a genial companion full of information, a dusty half-hour's walk from the station only prepared us for more fully enjoying what was to come—a hospitable reception at the house of a relative with one of those beautiful picturesque gardens of old days which are one by one disappearing before the advance of bricks and mortar. We were then taken to an amateur's collection of Orchids, which, by the size and health of the plants, reminded me of Mr. Rucker's collection in old days—rare Orchids, not in single plants, but by dozens. Some beautiful species were in bloom; in the full flowering season the sight must be splendid. We then went to Mr. Ware's, and, under the guidance of Mr. Perry, had a real treat. He certainly has, to say the least, no advantage of situation, but makes the plants under his charge grow beautifully. I was especially struck with the Cape and Californian plants. Many of the tall herbaceous plants were very fine, and one plant of Sparaxis pulcherrima was a picture. The Lilies were very good; L. pardalinum, L. californicum, L. longiflorum in its different varieties, and L. Szovitzianum were over, but the tall, stout stems and large seed-pods reminded me of those grown in Edinburgh. Altogether, the garden is a most interesting one.—G. F. Wilson, *Heatherbank, Weybridge.*

A GARDEN COVERED WAY.

The illustration on the opposite page shows a very successful covered way in Mr. Noble's garden at Park Place, Henley-on-Thames. The gardener's house is placed between two ranges of glass. The covered way connects the two, and leaves a space in front of the house protected. Beneath the glass roof of this and clustering round the pillars are various plants which thrive with such protection better than in the open garden. The effect from the garden is very good, and the plan is in all ways so successful that it would seem worth adopting in other situations besides the one now illustrated. The above cut shows the covered way in relation to the glasshouses on each side. The whole is very tastefully garlanded with plants by Mr. Stanton.



Begonias Planted Out.—Tuberous-rooted Begonias may with little protection be left in the ground all winter, and in that case they throw up shoots early in the season, and are effective sooner than those planted in the spring. By the latter method, however, if the soil be deep, moist, and rich, and in a warm, sunny spot, under a south wall or sheltered by trees and shrubs, a good display may be had from July to October. Mulching during hot weather greatly facilitates growth, and consequently bloom; and if planted alternately with blue, white, or yellow Violas, the result is most satisfactory.—S.

Climbing Roses and Holly.—A very pretty effect is produced in a small garden near London by a large specimen Holly being overrun with Roses. The Holly still retains a profusion of berries, part of last year's crop, and the Roses, which consist of the common white-clustered Damask, form a striking contrast with the red and green of the fruit and leaves. Although the practice of overrunning trees and shrubs with climbers may not in every case be advisable, yet, in this instance, neither Roses or Holly trees appear to be injured by the union. A silver-variegated Holly, near the one alluded to, overrun with striped York and Lancaster Roses, is also an effective object.—C. S.

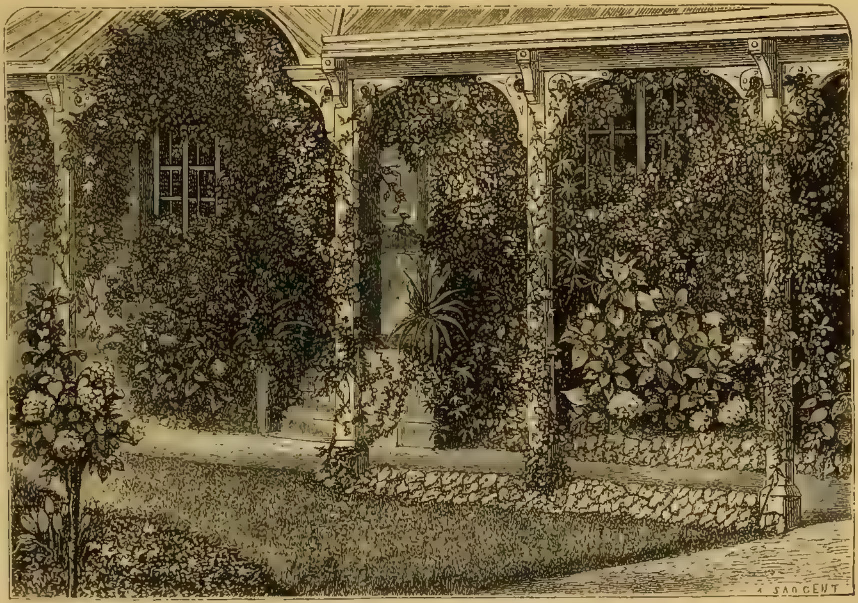
Muhlenbeckias.—For covering trellis work or for isolated specimens on stumps, &c., these graceful and free-growing evergreen trailers are invaluable; in fact, they present an appearance not obtainable in any other class of hardy plants. The kinds in cultivation are all natives of New Zealand. The best known is M. complexa, which is a very rapid grower, with long, wiry, and entangled branches bearing minute oval-shaped leaves. The flowers are rather inconspicuous, being white and of a waxy substance, about ¼ in. across. M. adpressa is larger in all its parts than the preceding, bearing heart-shaped leaves and long racemes of whitish flowers. M. varia is a small-growing kind, with fiddle-shaped leaves and very distinct from either of the above. They are very indifferent as to quality of the soil, but grow best in a rich compost.—A.

ROSES.

HAPPY HOURS.

THEY who love the beautiful, and who live in London or near it, may have a large happiness at a small cost if they will betake themselves to the station in Liverpool Street, and purchase a return ticket (price, for second class carriages, half-a-crown) to Waltham. Arriving, they will pass at once from the platform into the very interesting and extensive grounds belonging to Mr. William Paul, and will find themselves suddenly surrounded by a manifold and delightful variety of "things pleasant to the eye." Walking up a broad way of level, close-cut sward, they will see to the right and left not only Roses in abundance, old and new (from *the* Madame Plantier, before which Sir Joseph Paxton sat himself down that he might admire her beauty in a long and leisurely enjoyment, to the last belle of the season), but also the "pictorial trees," trees grown for the purpose of diversifying and lighting up our sombre shrubberies—golden Oaks, Chestnuts, Sycamores, Elders, Ashes, Acacias, Yews; silvery Maples, Poplars, Osmanthus, Hollies; trees beautiful for their foliage, and trees beautiful for their flowers; evergreen and deciduous, high and low. There you may learn, if you please, for Mr. Paul, or his son, or one of his staff, will tell and show you all; how old favourites among the Roses are multiplied out-of-doors by the acre in the budding grounds, and indoors, that is, under glass, by the thousand (you may see that number of Niphetos and Maréchal Niel together, and in the perfection of cleanly health), and also how new favourites are obtained; and of the latter I would advise you not to forget May Quennel, a grand acquisition (the best seedling Rose I have seen this year), and the Countess of Rosebery. And then you must go on, some mile and a half, on wheels or feet, as you prefer, to Cheshunt, and there Mr. George Paul will dazzle your eyes and bewilder your brain with beauty. He will show you that which has been your ideal and dream, but which, in all probability, you have never seen, the Rose in her complete, unblemished prime. You may have met with her very lovely at the shows, but there something of the freshness is always wanting. Here, in her first home and beauty, you see the Rose. And why? I know the answer which the inexperienced make. "Oh!" they say, "on this fertile plain of rich alluvial soil, sheltered but not overshadowed, you must have Roses. Dip a walking-stick in Rose-water, and plant it here, and it will produce you beautiful flowers." No doubt the soil is genial, no doubt the position is propitious, but you must have something more. The walking-stick reminds me of a story, how a clergyman borrowed a sermon which had much impressed him and the congregation to whom it was addressed, preached it, and returned it to the author with the remark that it had not interested his people more than one of his own discourses. To which the reply was sent—"Dear Sir, I lent you my fiddle, but I could not send you the stick." You must have the mind, the man, to do anything excellent; and whoever hears George Paul speak about Roses, or sees the reverent love with which he handles them, knows at once the source of the success. And this success is, perhaps, most strikingly demonstrated in the glorious Roses born and bred at Cheshunt. Nothing can exceed in rich, glowing brilliancy the Duke of Edinburgh, Reynolds Hole, Sultan of Zanzibar, and others as seen in the Rose fields of Cheshunt when the sun is westering to its close, or when morn in the bright wake of the morning star comes furrowing all the Orient into gold. I thought, as I came back to London with a brother rosarian well pleased as I, how much more happily and healthfully to body and spirit an evening might be spent (as ours had been) than in hot dining-rooms or gas-tainted theatres, and carrying away bright Roses and yet brighter, because more lasting, memories. I pitied the poor folks who were fuming and fanning in the crowded tents of Vanity Fair, vainly striving to suppress those persistent yawns, which say, as plainly as Mariana's words, "I am a-weary, a-weary; I wish I was in bed."

S. REYNOLDS HOLE.



A Garden Covered Way (see p. 56).

CUTTINGS OF ROSES.

THERE can be but little question that for most purposes, and with far the greater number of the varieties of Roses in cultivation, they are much better grown on their own roots than either budded or grafted. The fact that comparatively so few Roses are met with on their own roots may be attributed to two causes, the first of which is that by budding and grafting many more plants may be made of a scarce new variety than can be done by cuttings, and also that the plants when on suitable stocks can be sooner had, not only in a condition to bloom, but in a shorter time attain a size to produce flowers freely. In the cutting-striking of Roses, in the manner often practised at this time of the year from half-ripened shoots, there is a good deal of uncertainty, a considerable portion turning brown and dying off instead of forming roots. The method frequently pursued is to take a number of the half-matured shoots reduce them to a couple of eyes, insert them in cutting pots, and at once place them in bottom-heat. To the latter cause is attributable many of the cuttings failing to grow, as, unlike plants of a softer nature, in this way they are too much hurried. If, instead of at once putting them in bottom-heat, the pots containing the cuttings were placed for about three weeks in a cold frame on a bed of ashes, so as to exclude worms, and kept closely shut up, they would do better. When the sun is very powerful the frame should be shaded with a mat and a little air should be given, but not so much as to make the leaves flag. As a further preventive of this, too, the soil in the pots should be kept moist by syringing overhead daily in hot weather, and the surface on which they stand should also be well moistened. Treated in this way, in the course of the time stated almost every cutting will be found to have formed a callus at the base; and when this exists they may be at once put in a moderate heat, when very few will fail to strike directly. When fairly rooted give more air, gradually dispense with the shading, and pot them off singly, but they must be kept for some time sufficiently warm to further the development of as great an amount of roots as possible before winter, for on this, in a great measure, depends the size and strength which the plants will be able to attain the ensuing summer. For propagating in this manner, cuttings should be put in without delay, otherwise the season gets so far advanced that there is not enough time for them to become established singly in pots, and that necessitates their being kept in cutting pans through the winter; consequently, their being potted singly is deferred until spring, when the disturbance of the roots interferes with their progress. Another matter that has a great deal to do with the plants attaining a useful size in the least possible time, and which, with many, is a matter of the greatest importance, is that the cuttings be had as large as they can be got consistent with the requisite condition of the wood. As I have said, it should consist of shoots in a half-ripened state, but instead of reducing them to small bits with a couple of eyes each, if they can be had 6 in. or 7 in. long all the better. Insert them at least 2 in. deep in the pots, in which way they are less likely to get disturbed than when they have not so much hold of the soil. Stout Rose cuttings such as these will make plants in half the time that small weakly bits will, just in the same way that the strong mature shoots taken off plants late in the autumn and made into cuttings 8 in. or 10 in. long, and inserted well in the ground in cold frames or other slight protection, make plants so much sooner than cuttings not more than half the size. The pots must be sufficiently drained, and the soil should consist of about one-half finely-sifted loam to an equal quantity of sand well incorporated. Before putting in the cuttings see that they are quite clear from mildew and aphides, as, should either of these exist, they attack the young growth as soon as it is formed, and prevent any satisfactory progress being made. A little Tobacco water, sufficiently strong to kill the aphides, with Gishurst at the rate of 2 oz. to the gallon added, will exterminate the mildew. Dip the cuttings in clean water before placing them in the pots, as I have found that Tobacco water or any similar mixture in which cuttings are immersed sometimes affects their striking.

PLANTING OUT ROSES FROM POTS.—Where any alteration has to be made in the planting of Roses against walls, rustic fences, pillars, or in beds, by the substitution of better for inferior varieties, this may at once be effected where strong plants of the required kinds in pots are available, which they often are in private establishments where Roses for growing in pots are yearly propagated. When there is a surplus of such over the requirements for forcing, or in the case of any that are getting larger than wanted, they may with advantage be utilised in positions like the above; this applies more particularly to the best free-growing Tea varieties, which it is well to have on walls or other places where they will receive some protection. If planted on different aspects they will yield a regular supply of flowers through the summer and autumn, which is a matter well worth consideration where Roses are required largely for cutting; for although variety is desirable, yet Roses, if to be had in sufficient quantities, and in their various shades and colours, go far to satisfy most people. In fact, it is a question whether a vase or stand of any description tastefully filled with Roses, relieved by their own foliage, and perhaps a few Ferns, can be much improved by the addition of any other flowers. Plants such as described, by being turned out now, will commence rooting at once, and make better growth and yield more flowers, especially during the latter part of next summer, than they will if not planted until the autumn or winter. Where either Roses that have to be discarded, or anything else has been grown calculated to exhaust the soil, it will be better to remove part of it and replace it with good loam enriched with rotten manure. T. BAINES.

Cutting Roses.—In cutting Roses many think that they are injuring the bush, especially if a good length of wood be taken with the blooms; but that is not so. We cut hundreds of blooms during the season, and, although about 1 ft. or more of wood is removed with each bloom, we never had Roses more numerous or finer than they are this season.—CAMBRIAN.

THE FLOWER GARDEN.

OPEN-AIR VEGETATION IN JUNE.*

JUNE has been mild and agreeable, although somewhat hot towards the end of the month, when a severe thunderstorm was experienced, accompanied by heavy rain and hail, the latter damaging the leaves of many herbaceous plants, such as Rheum officinale, Vegetable Marrows, and other large foliaged plants. Easterly winds were prevalent, with occasional showers, somewhat resembling the June months of old. Arborescent vegetation, although earlier than last year, is still about ten days behind, comparatively few trees being seen with their full complement of leaves thoroughly developed. Perhaps at this time the most copious display of foliage is to be observed on the Sycamore or Plane trees, Limes, Elms, Service trees, Horse Chestnuts, and Thorns, all being kinds already noticed as remarkable for their scarcity of flowers. Although Lime trees are not yet in bloom, and although there is little appearance of their flowering profusely, owing to the points and leaves on that part of the trees being much destroyed by caterpillars, the bulk of the leaves away from the points are all thoroughly developed and, as yet, free from caterpillars. The prevalence of easterly winds has been very destructive to the blossoms of many fruit-bearing trees, and fruit in consequence is scarce in comparison with the mass of blossom which each tree originally showed. During the early part of May the young leaves of many trees got scorched by lightning, and large portions of Beech, Elm, Oak, and others seem very much browned on one side in various parts of the country. In my notes on open-air vegetation for May I stated that certain trees and shrubs had produced few or no flowers. I have to add that the blossoms of many other later flowering kinds have also been exceedingly limited. A large tree of the Flowering Ash (Fraxinus Ornus) standing in the centre of the garden here, and which is generally observed to bloom freely, came into flower on June 18, while the 28th was the day on which the first flower opened last year. Instead, however, of 400 or 500 heads being expanded at one time, not more than 80 could be counted altogether, and these unusually small and of short duration. Many Service trees which fruited last season have very few flowers on them now. A large Sorbus domestica, annually noticed for its systematic flowering, still exhibits the same peculiarity, but in a less degree. The top of the tree in question is divided into two leading heads, which flower alternately each successive year. Last summer the western half was loaded with flower and ultimately fruit. This year, although only three or four dozen heads were visible, they were on the eastern half. On Sorbus torminalis, which was remarkable during 1877 for the abundance and brilliancy of its fruit, not a vestige of flower is to be seen. The foliage on all the Service trees is now in perfect health. Walnut trees look as if they would be barren. Their foliage in general is poor; many of the young leaves fell off early, quite black. The Elder, which is by no means overloaded with blossoms, opened its first flower-head on the 15th, although the first blossom on the same plant was not opened last year till the 27th. The Portugal Laurel and the Bay, which are often in full bloom at this time, have no flowers on them, and scarcely any buds. Holly, on which there was last winter such a show of fruit, and which ought to be in full flower now, has very few as yet visible, while numerous clusters of berries of last year's crop are still adhering to many plants. Yew berries were also particularly abundant during the autumn of 1877, but very few are now to be seen, even in a young green condition. Ghent Azaleas have been very full of blossom, and so were the varieties of the beautiful Alpine Rose (Rhododendron hirsutum and ferrugineum), which are, perhaps, finer than they have been for many years. Of the Kalmia latifolia, although not less than 150 plants are cultivated in the garden, not one is in flower, notwithstanding the specimens are all in the most perfect health, and vary from 2 ft. to 36 ft. in circumference. Some large plants of Wistaria sinensis, which are generally covered with flowers, are this year bloomless, although the plants are all in vigorous condition. The scarcity of bloom on the various examples alluded to is in a great measure due to the unripened state of the wood from want of sun during the last two summers. As far as this season has yet gone, and judging from the more matured state of the wood, we may fairly look for a copious display of bloom, and probably fruit, next season. In those instances, in which the bloom has been stated as very plentiful such as in the case of Ghent Azaleas and Alpine Rhododendrons, the flowering growths were observed to be unusually short. As this season has the appearance of being very favourable for the formation of leaf-wood growth, it may not be so advantageous in every instance for the formation of flowering wood.

On the rock garden 360 species and varieties of plants were counted in flower on June 30. Perhaps the most striking were the varieties of Orchis foliosa and O. maculata superba. These plants are usually cultivated in dampish soils. Here they are flowering freely in comparatively dry stone compartments. Many of the plants originally put in with single roots are now tufty, each with many heads of flowers, and annually increasing. The Orchis maculata superba has heads of flowers 5 in. long and 5½ in. in circumference. The varieties of Alpine Poppies are also very beautiful, being crosses between Papaver alpinum, P. nudicaule, and others. They are white, yellow, and orange, and vary also in size and depth of colouring. The Orobanche rubra (Red Broom Rape) which flowered last year, producing eight spikes, has this year forty-two flowering-heads coming forward on the same plant. It is growing on the roots of the White Thyme, on which it is a parasite. This tuft of Orobanche is about 16 in. square. Besides soil, a portion of the Thyme is growing on stone and a part on a walk made with ashes; some flowers of Orobanche are to be seen on each place.

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* Read by Mr. James M'Nab before the Botanical Society of Edinburgh, July 11, 1878.

Calculating the night temperatures above the freezing point during the month of June, I find that the aggregate is 493°, while the corresponding month of 1877 indicated 485°, showing a difference of 8° above last year. The six lowest night temperatures were on the 4th, 5th, 6th, 11th, 13th, and 14th, when 36°, 38°, 42°, 41° 39°, and 40° were indicated; while the six highest were on the 20th, 23rd, 26th, 27th, 28th, and 30th, when 54°, 55°, 57°, 56°, 58°, and 54° were indicated. The six lowest night temperatures above 32° amount to 236°, while the six lowest last year were 241°. The aggregate of the six highest this year was 334°, while 325° is the amount recorded last year.

The following is a list of some of the most conspicuous plants now in bloom on the rock garden (June 30):—

Allium McNabianum
,, oreophyllum
Androsace lanuginosa
Arnebia echioides
Arenaria laricifolia
Aster alpinus albus
Astragalus alpinus
, vaginalis
Campanula turbinata and varieties
,, Van Houttei
Chrysobactron Hookeri
Cypripedium spectabile
Delphinium Belladonna
,, cashmerianum
Dianthus alpinus
,, neglectus
Dracocephalum grandiflorum
,, speciosum
Epilobium obcordatum
Eriogonum aureum
Eriophorum alpinum
Erodium Manescavi
Fragaria lucida
Galax aphylla
Gentiana gelida
Helonias asphodeloides
Iris filifolia
Linnæa borealis (American)
, ,, (Scotch)
Meconopsis nepalensis
,, Wallichi
Menziesia polifolia versicolor
Nierembergia rivularis
Orchis foliosa
,, maculata superba
Oxytropis cyaneus
Papaver alpinum aurantiacum
Potentilla alchemilloides
Primula capitata
,, luteola
,, scotica
,, sikkimensis
Rosa pyrenaica
Saponaria cæspitosa
Saxifraga (many sorts)
Sedum ,,
Sempervivums ,,
Silene alpestris
Veronica rupestris
Watsonia splendens

Mr. McNab placed on the table about sixty species of hardy Alpine and herbaceous plants in pots, including the following:—

Astragalus alpinus
Campanula macrostyla
,, Raineri
Cyananthus lobatus
Dianthus alpinus
,, ,, hybridus
,, deltoides
,, dentosus
,, neglectus
Disa grandiflora
Epilobium obcordatum
Erpetion reniforme
Gentiana ornata
Orobanche rubra
Papaver alpinum album
,, ,, aurantiacum
Primula capitata
Saxifraga aizoides
,, mutata
,, flagellaris
Sedum brevifolium
,, ,, Pottsi
Sibthorpia europæa variegata
Silene Elizabethæ
Spraguea umbellata
Swertia perennis
Triteleia Murrayana

Half-hardy Salvias.—The finest of these in flower at the present time is undoubtedly the Mexican S. porphyrantbera. The brilliancy of colour and size of the flowers far exceed those of any of the cultivated scarlet-flowered kinds. It is also very floriferous. S. farinacea, a beautiful kind, was figured in The Garden last year; it apparently varies greatly in colour, as in the specimen under notice the blossoms are of a light lavender with a white lip, quite different from that of the figure just referred to. The flower-spike is covered with a very short, dense pubescence, which gives it a mealy appearance. S. interrupta, a species introduced a few years ago from Morocco by Mr. Maw, is also very fine, with large light blue and white flowers. S. Grahami, another very old Mexican kind, has a very distinct habit and blossoms of a bright carmine colour. Although the above are classed amongst half-hardy kinds, yet they are quite hardy enough to survive an ordinary winter in a light, warm soil in the southern counties.—W.

HARDY CYPRIPEDIUMS.

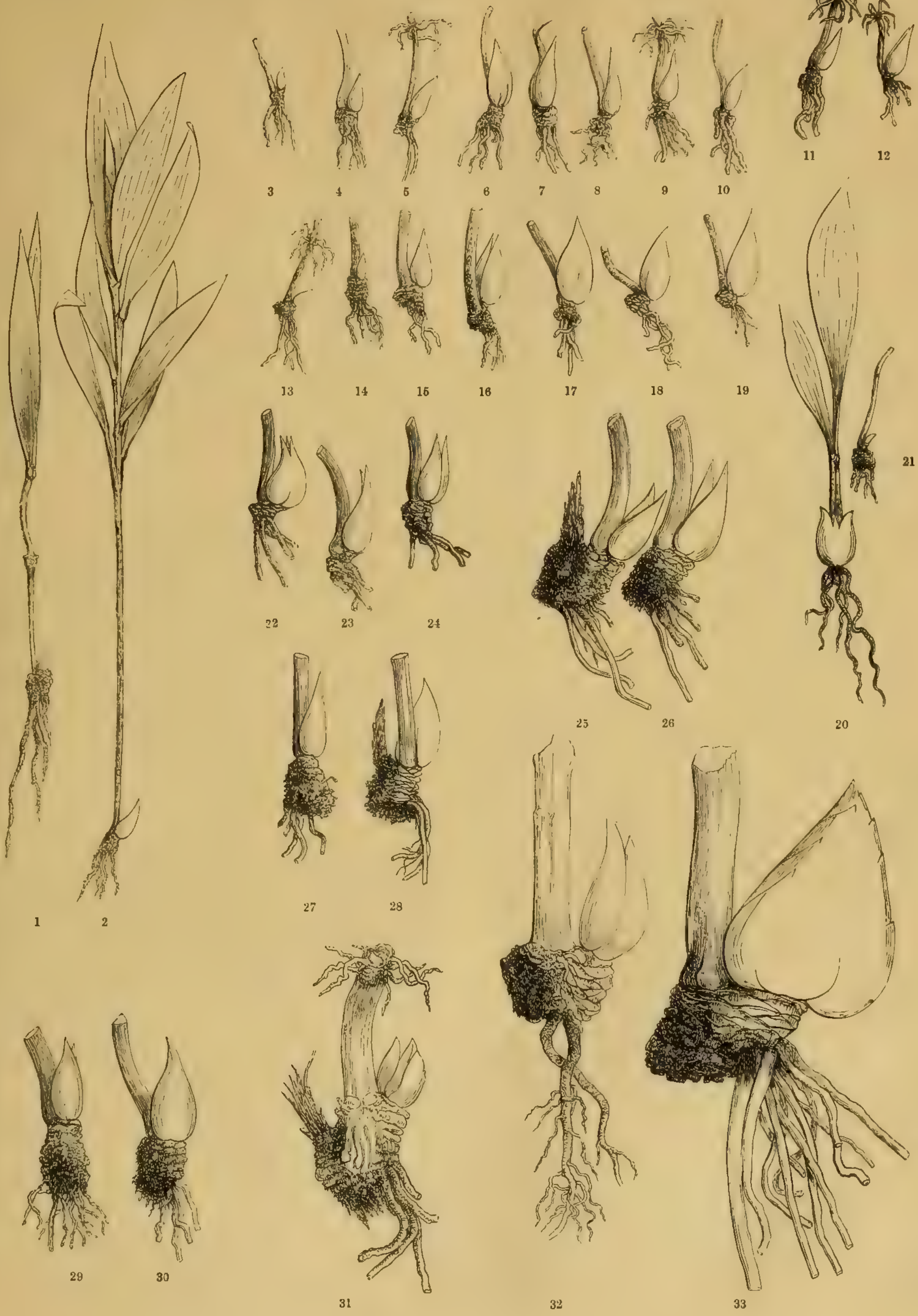
To lovers of flowers Orchids have always a special interest; the generality of them, however, are natives of tropical climates; but, fortunately, during the last few years some hardy species of Cypripediums have been discovered and largely imported into this country, one at least of which will vie with any of those that are grown in hothouses. The most lovely of the hardy kinds is C. spectabile, which throws up stems from 12 in. to 18 in. high that bear during June or early in July from one to three flowers at their apices; the sepals of this species are pure white, and the lip or slipper part suffused with bright rose, the two delicate colours blending most beautifully together. This pretty Cypripedium is a native of the United States and North America, from whence large quantities are annually imported during the winter; and as strong tufts of these can be purchased at from three to five shillings each, their price brings them within reach of most people who are fond of their gardens. C. japonicum, a more recent introduction from Japan, is another charming variety that forms an admirable companion plant to the above, and, like it, is perfectly hardy in any sheltered positions where it can have the protection of shrubs or rock, or receive a slight mulching of Moss or partly-decomposed leaves just over the crown. C. Calceolus, as its specific name implies, somewhat resembles the Calceolaria in the form and colour of the flower, the lip being of a bright golden-yellow, which contrasts well with the dark sepals, by which it is backed. Although this variety is a native of Britain, it is very rare indeed that plants of it are now found, and those in commerce are from imported plants, or are obtained by propagation, which is done by dividing the crowns, a rather slow process, as they do not spread very rapidly. There are several others of these hardy Cypripediums, all more or less interesting, but the three just named are the most distinct and showy, and an additional recommendation is that they are the easiest to cultivate. Those who have seen the fresh imported tufts of C. spectabile, will, on examining them, soon be able to arrive at a pretty safe conclusion as to the treatment they require, for the roots are found embedded in layers of flaky peat and Moss, intermixed with other decomposing vegetable matter, such as is only found in shady damp places. To succeed with them, therefore, they must not only have similar material afforded them to grow in, but a position where they can enjoy the same or similar conditions of root moisture they formerly had, and any one having such a spot, or a cool shady corner where they can keep them well watered and duly attended to, will find these Lady's Slippers among the most beautiful plants they can have. Although they may be grown in pots with tolerable success, they do not succeed near so well as when planted in a bed in a situation such as that above described, as there they are not so restricted for root room, or subjected to sudden transitions in regard to moisture, a uniform state of which is essential to their welfare. If kept in pots or pans they should be placed along the front wall of any damp, cold frame, where they can receive the constant shade of the brickwork and have the full benefit of the moist atmosphere there generally is in such structures during the early spring months, a time when Cypripediums are making their growth. In order to get them to bloom freely, the principal thing is to induce a free, healthy development of foliage, for without this it is impossible to get full, plump crowns by the autumn, and it is only such that have sufficient strength to produce flowers the following year. The leaves should, therefore, be preserved as long as possible in a fresh, green state, and allowed only to die away naturally when their functions are performed. It should be borne in mind that, although these Cypripediums come from extreme northern latitudes, they are protected by fallen leaves or other covering during the winter, and to render them safe at that season it is necessary to afford them similar shelter and to plant where they will not be affected by cold, cutting winds, which nip the tender growth in the spring. S. D.

FROM THE BIRTH TO THE DEATH OF THE LILY.

In my paper of April 27 (Vol. XIII., p. 385) I endeavoured to explain as clearly as I could the existence of the Lily from its birth until the seed-bud was six months old, that is, the existence of the germ until it had vegetated and was large enough to be seen by the naked eye, and then on, as the seed-bud, until, at the end of the six months, it was about to enter another phase of its growth, entitling it to be called a bulbule, or small undeveloped bulb. In order to bring up the history of the Lily in a connected form I must now turn back to the first step in life, but it will be on this occasion not in connection with the hereditary succession or reproduction of the Lily by central seed-buds, but in connection with its propagation by offsets. Mr. J. G. Baker, of Kew Gardens, has laid Lily growers under a debt of gratitude by placing in their hands a new synopsis of all the known Lilies. Having done so much, he can well afford to allow me, an amateur of some little experience, to make a few remarks in connection with the underground growth of the plants. In Vol. XI., p. 112, of The Garden, he is there represented as saying: "A new bulb, whether grown from seed or from bulblets developed in the axils of the aboveground leaves of the floriferous stem, or produced in the axil of one of the bulb-scales, takes not less than three years, under the most favourable circumstances, before it develops a flower-bearing stem." The same writer who quotes the above adds at p. 116: "Raising seedling Lilies is a long process, as one must wait from three to ten years ere they bloom." All this may be admitted, but this is not the point. Mr. Baker is further represented as adding: "The first season we get an ovoid mass, perhaps ¼ in. in thickness, composed of half-a-dozen tightly imbricated scales, which sends out three or four slender radicular fibres from its base. At the end of next summer we have a bulb as large as a Hazel nut, with a copious development of strong radicular fibres from its under side, and the half-dozen scales prolonged above the soil into a rosette of oblanceolate leaves. Next year, if circumstances be favourable, the flower-bearing stem is developed, and then, if nothing untoward happen, the bulb goes on living for an indefinite period, sending out each year a flower-stem from its centre and shredding off old scales with buds in their axils—more copiously in some kinds, less in others—from the circumference all around." In this statement it will be seen that there is no allusion whatever to the interior action of the bulb. The very existence of a central seed-bud is ignored entirely, though facts prove that to it, and to it alone, we are indebted for the annual bloom.

The above remarks have been quoted and requoted in this and other periodicals, with such variations as the fancies of the different writers have induced them to make, until at last the result is that there is not one in every fifty Lily growers who do not believe but that the same identical offset goes on year after year growing larger and larger until it becomes capable of developing a flower-bearing stem. Now, this is entirely erroneous, and clearly contrary to facts; for experimental researches have proved beyond a doubt that there is no such thing as a two or a three-year-old offset, the existence of an offset being comprised within the first season of its growth, after which it decays and dies, having thus fulfilled what Nature had destined to be its office. In the meanwhile, however, a successor is growing up within the original offset in the same manner as the legitimate seed-bud or bulbule is growing up within a fully developed adult bulb, with this exception, that every season Nature clothes the successional offset bulbule with new and more numerous scales, the original offset not having had a covering of more than some six or eight scales, according to the class of Lily to which it belonged. The first appearance from the offset above the ground is not a stem, but is generally one or two leaves attached to a long slender stalk or petiole. If lifted out of the ground, the offset will be found to be possessed of slender rootlets, these having been protruded from the base of the offset before the leaf and its stalk began to rise, or, indeed, before there was the slightest appearance of their rising. The next season we see in a bed that has been originally planted with genuine offsets a very slight stem shooting up, furnished with a few leaves. This is a sign that a germ in the centre of the original offset has vegetated into a seed-bud; for without the presence of a seed-bud there can be no real stem. The next season the stems will appear larger and more fully developed, and the bulbules, if dug up, will be found to be also larger, with more scales, and with new and more numerous roots—the site of the decayed stems and roots of the previous season being on all the bulbules distinctly visible. This process goes on year after year until the bulbule, which may now be called a fully developed bulb, produces a flower-bearing stem. All this is, to the Lily grower, worthy of the most attentive study, as the first thing that must strike the reflecting mind is the harmony that exists in what we are permitted to contemplate in the Lily, namely, the singular similarity in the organisation of all the kinds that are really true Lilies. Yet there are some writers who assert, without the vestige of a single experimental fact to support themselves, "that the different ways of reproduction are so marked, that it affords subject-matter for endless controversy." A distinguished Lily grower has also said in The Garden lately: "Lilies of various sorts form their bulbs very differently; therefore, no general theory can be applied to every species." It is a fact, and I regret to say it, that visionary theories have created a great deal of confusion in the minds of amateurs and Lily growers in general, as it is impossible for them to reconcile the various and contradictory opinions that are floating about. For myself, I must say that I deal with facts, where no inconsistencies can arise, and I place it within the power of any one to prove, by facts, whether I am right or wrong. With respect to the little bulbs, while only small offsets, they have by some been called side-buds by way of contradistinction, and have also been called the principal reproducers of their class. Now, some of them may be called side-buds, though more properly small offsets, but they all differ widely from the true legitimate reproducers—the central seed-buds. The central or legitimate seed-buds are growing up, not at the side, but in the very centre of the parent bulbs, and will, most certainly, without changing their identity, flower the season after the parent bulbs have bloomed, unless something unforeseen should happen to them; that is, they will germinate, grow up, bloom, decay, and die, all within two years; while the side-buds or little offsets, which have no fixed place for their appearance at any time, will change their identity, by being transformed by a new creation every year, and will not take less than three or four years before they can, through their transformed successors, develop flower-bearing stems. These side-buds or little offsets are the means which Nature has placed in our hands for the purpose of propagating and multiplying the species, but not for the purpose of reproducing that which is lost, namely, the parent bulb, or the bulb of the previous season. The reproduction of that bulb is due alone to the central seed-bud; for this bud, the instant it has germinated, is provided with all the organs of vegetation that the full-grown Lily possesses, and is, in fact, a miniature resemblance of an adult bulb. This should teach us that if we desire to ascertain whether a plant is a true Lily or not, we should carefully examine the organic interior structure of the bulb, as well as the flower itself. These side buds, though they have been made a great deal of by some writers, cannot be placed under any other category than that of "adventitious buds," for they present themselves without any order, and the exact spot where they may present themselves cannot be foreseen. It will, therefore, be seen that those who deal with the propagation of the Lily by seed, bulblets, or buds in the axils of the old scales entirely overlook the marvellous organ and its functions which Nature has provided for carrying on the hereditary reproduction of the plant, for the central seed-bud alone is all-sufficient to continue to reproduce annually the Lily and its bloom, if seeds, bulblets, and all sorts of adventitious buds were never to have any existence. In fact, we every year see this result in our gardens, though we never dream of searching or looking for the cause.

As a practical, and almost tangible, illustration of the truth of what I have said, I send herewith a photographic representation of the interior and reproductive organs of offsets, bulbules of one, two, and three years' growth and fully developed bulbs, collected during the first two weeks in May last from clumps of a dozen or more distinct species of Lilium proper; I also send the originals, so that there can be no room for a doubt on a question of so much importance to Lily



REPRODUCTION OF LILY BULBS.

growers at the present time. There are three specimens of the offset in its first and only year; eighteen specimens of offset bulbules in their second, third, and fourth years; and twelve specimens of fully developed or flowering bulbs. It is impossible to look at these thirty-three specimens without seeing that they have all been growing up from the base and close to the parent stem, the same organisation and structural formation being distinctly apparent in all.

I would wish particularly to draw the attention of Mr. Harvey, Mr. Groom, and some others who are interested, to the specimen No. 31 low down on the right hand side. This Lily was one of the same clump as that which is represented in Vol. XIII., p. 143. That bulb was lifted out of the ground on January 1; this one in the beginning of May. The difference in the seed-bud of the former specimen (which was six months old when lifted) from the almost fully-developed bulb of the present specimen shows with what rapidity (according to an increasing ratio) the interior parts grow, with the additional aid of their own roots and favourable weather during the second six months of their existence, as noticed and calculated by me in a former paper. I have also to direct attention to the roots of this specimen. They are new, for I carefully removed the parent roots to make the new ones more apparent. They were, as they are now seen in the drawing, nearly 2 in. long in the beginning of May. By the time the parent bulb would be in bloom, namely, about the end of June, they would be much longer if they had been left in the ground, drawing a large and independent amount of nourishment from the soil, as I explained in my reply to Mr. Groom (Vol. XIII., p. 451). Turning over now to p. 489, we find Mr Groom saying: "In reply to Mr. Hovey, 'Dunedin' reiterates the advantage of early planting, and states that no harm resulted from lifting the bulbs in full bloom on June 30 and exposing them to the atmosphere during six of the hottest weeks of the year." Now, if Mr. Groom will kindly refer again to my reply to Mr. Hovey, he cannot but see that I have said no such thing; in fact, in all my writings I have always spoken strongly against exposing Lily bulbs to the damaging influences of the air. As to the advantages of early transplanting, according to the class of Lily and time of flowering, to which Mr. Groom objects, it will yet be found that these cannot be overrated, for as soon as the parent plant has bloomed, the new bulb will be in the very best condition for the change, without the risk of any check to its progress; and the warmth of the atmosphere at the time will also be much in its favour. It is a remarkable circumstance that the advocates of later transplanting cannot produce a single fact in support of their system. One gives one reason, another gives another, and when investigated, they turn out to be mere fancies; and those who talk about the propriety of Lily bulbs being permitted to remain some years in the ground without being disturbed, really do talk as if Lily bulbs were perennials, overlooking or not knowing the fact that the true Lily blooms only once and then dies.

DUNEDIN.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Spiræa palmata elegans.—This has given as much disappointment here as at Newry (see p. 2). It is simply good for nothing, and the least ornamental of all Spiræas. It bears rather a close resemblance to S. palmata in foliage, but in colour, boldness, and mass of flowers it in no way resembles nor can be compared with palmata, which is one of its alleged parents. With its other alleged parent it has no affinity whatever. I quite agree with Mr. Smith that we have been imposed upon in this matter, but think we have imposed on ourselves in the first instance by adopting and using the name Spiræa for Hoteia without any authority, so far as I am aware. By doing so we lift Hoteia japonica out of the Natural Order Saxifragaceæ and place it in Rosaceæ, to which Spiræa belongs, but we do not succeed thereby in establishing that identity of structure and natural affinity which is essential to the production of a hybrid. Practically, I presume, it would be as reasonable to expect to obtain hybrid offspring from an attempt to cross a Peach and a Saxifrage as from Hoteia and Spiræa, even though mere superficial resemblance favours the notion that such a thing might be remotely possible in the case of the two latter. By adopting this erroneous name and using it in the universal way in which it has been used since the so-called Spiræa japonica became a popular forcing plant, it appears to me that if we do not invite imposition we at least spread erroneous ideas, which are certain to return upon us with one vexatious result or another.—W. SUTHERLAND, *Aigburth Nursery, Liverpool.*

Lilium excelsum.—Four years ago one bulb of this Lily was planted in an ordinary border and has since then remained perfectly undisturbed; it has bloomed well every year, and this year has produced four spikes, the tallest of which is over 6 ft., and at the present moment there are just twenty-four fully expanded blooms on it. Szovitzianum has also done remarkably well under the same conditions, and every year increases in strength, yielding this year a profusion of its handsome flowers. The soil is a very heavy one, but neither of these Lilies has had the slightest protection. Under the same treatment L. auratum has entirely disappeared.—A. K., *Eastcott Cottage, Pinner.*

Saxifraga nepalensis.—"A. D." says (see Vol. XIII., p 536) that this Saxifrage is far from being a free bloomer, an assertion contrary to my experience. I have grown it by hundreds for years, and so great was the demand for it that it was almost an impossibility to keep a stock of flowering plants of it on hand. My mode of treatment was as follows: In the spring and autumn of each year I secured all the offsets possible and inserted them in sand under a handlight, where they soon formed roots; I then potted them in 3-in. pots, and grew them on in a frame, taking care to keep them at all times free from offsets, which would have greatly impeded their progress. I always found that cuttings inserted in spring could be made to flower in spring two years afterwards, that is to say, if they had been put in last spring they will flower in the spring in 1880. I have flowered plants of it in twelve months, but only in cases where strong rosettes were obtainable.—E. JENKINS, 16, *Canterbury Terrace, Maida Vale.*

Forget-me-nots in Marshes.—Beautiful as beds of Forget-me-nots are in the flower garden in spring, I doubt if any of the cultivated kinds, including Myosotis dissitiflora, certainly the finest for beds, can rival the masses of the common M. palustris, with which one meets at this season in water meadows and marsh ditches, where large breadths of lovely blue are only broken here and there into irregular outlines by some more stately form of vegetation, such as Reeds, Rushes, and other plants that delight in abundance of moisture. I may add, too, that at this period of the year, positions in which Forget-me-nots abound are also very rich as regards other flowering British plants that flourish under semi-aquatic conditions, and to those who are interested in beauty of form, I know of no more interesting spots than the native haunts of the wild Forget-me-not.—J. G.

Libertia formosa.—Mr. Miles (see p. 12) has done good service by directing attention to this lovely plant. I myself pointed out the value of Libertias as hardy plants in THE GARDEN some time ago. L. formosa is beautiful at all seasons, even in the depth of winter, owing to its persistent dark green foliage, which is as green as that of the Holly, and it produces spikes of flowers of snowy whiteness more like those of some delicate Orchid than of an outdoor plant. Amongst all the hardy plants which I grow it is, when in flower, the gem of the garden. There are about four species of these charming plants, amongst which there is some confusion as to nomenclature, formosa, pulchella, and ixioides often doing duty for each other. But formosa is in every way the handsomest of the group, as far as I have seen them; it is neat, dwarf, and compact, and has flowers twice the size of those of the others lying close together on the stem, and reminding one of the old, nearly extinct, double white Rocket.—THOS. WILLIAMS, *Ormskirk.*

Œnothera Youngi.—This is the best of the Evening Primroses for borders. Whether planted in masses and allowed to grow at will, or pegged down in front of low shrubs, it is equally effective; and in either case, if the soil be deep and moist, it will continue to flower for months.—V.

Aralia Sieboldi.—Fine plants of this Aralia have withstood the past winter near London without the least injury, and, where a little shelter has been afforded them by neighbouring trees and shrubs they are now growing vigorously. Were such ornamental plants as this left in some of the beds and borders in the London parks, and surrounded by spring flowers, they would not have such a desolate appearance during the dull days as they now have.—R.

Ferula glauca and communis.—These make charming fine-foliaged hardy plants, but need to get fully established before their full beauty is apparent. Plants of them grown in pots under glass are frequently discarded, as when the foliage gets drawn in too much heat it droops, and soon becomes anything but ornamental. But planted out of doors, with space in which to fully develop themselves, they are truly noble objects.—J. G.

The Pigmy Iris (I. ruthenica).—This is one of the smallest as well as one of the rarest Irises in cultivation. Its flowers, which are about 2 in. across and of a bright lilac-purple colour with a white lip, are borne on stems about 1 in. above the surface, and nestle snugly among the bright green slender foliage. It is also the latest to flower amongst Irises. Siberia and adjacent countries is its native habitat.—W.

THE LIBRARY.

FLOWERS: THEIR ORIGIN, SHAPES, PERFUMES, AND COLOURS.*

THE critic of any work must regard it from two points of view: its aim and its execution. Readable as are the works of Dr. Darwin and Sir John Lubbock, even for the unbotanical, there was undoubtedly room for some one handy volume which should sketch the whole of the new philosophy of flowers in the manner of the indefatigable and apparently omniscient Dr. Taylor. Any fears suggested by a proverb about numerous avocations were soon put at rest by evidence of knowledge of a most thorough order, and we were agreeably surprised to find, in lieu of a second-hand compilation, a work often highly suggestive to the working botanist. Nevertheless, as might be expected, Dr. Taylor appears to the greatest advantage in his chapters on the geological antiquity and geographical distribution of flowers where he competes least directly with the Master. Two of the concluding sentences of the first of these are noticeable: "We have seen that the appearance in geological time of the most beautiful or sweetly perfumed flowers is also that of the insects which now habitually frequent flowers. . . . . We have, therefore, a peculiar aspect of evolution here presented, not necessarily towards higher organisation (as some people think is imperative in evolution), but in the direction of special adaptation to each other's necessities and well-being, on the part of two groups of organisms having no other connection with each other." No doubt, as the author says, some excuse must be made for naturalists feeling irritated at the dogmatism of half-educated theologians; but, perhaps, it would have been better to leave the Church of Rome, Copernicus, and Dr. McCosh out of a work of this character. The book is fortunately well bound and on excellent paper. Its numerous woodcuts are mostly good old friends, and far better than the coloured plates. For whom do publishers insert these latter expensive atrocities? We have little doubt we shall speedily hear of a second edition, and hope then to see numerous "misprints" corrected. For instance, what does the following sentence mean: "There are more than 300 species of plants common to the Southern States of America and Japan than to Europe?" Fig. 91 is described as "Wood Sorrel (Anemone nemoralis) with 'monstrous' petal formed instead of true leaf," whilst it represents a Wood Anemone with such a petal in addition to the normal three leafy bracts on the flower-stalk. Such slips, however, are small matters, and we welcome the appearance of the work with all its imperfections on its head; for has it not a good index—that sop to the critical Cerberus—and would it not be valuable if only for teaching the *dilettante* that the inflorescence of Chicory and such Composites (*e.g.*, Daisy, Dandelion, Thistle, Dahlia, Chrysanthemum, and Cineraria) is not one flower, but a "social" colony, recognising even the great principles of self-sacrifice and the division of labour?

G. S. BOULGER.

The Chicory, or Succory (Cichorium Intybus).

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* "Flowers: Their Origin, Shapes, Perfumes, and Colours." By J. E. Taylor, Ph.D., F.L.S, F.G.S., &c. Hardwicke & Bogue.

STREET PAVING IN PARIS.

THE following statement was prepared by the Chief Engineer of Roads and Bridges, Paris, for the information of the Paddington Vestry:—

Granite paving does not exist in Paris, and that in porphyry is being abolished. The stone almost exclusively adopted is a hard sandstone, which is used in the form of a rectangular parallelopipeds (cubes) of 6¼ in. long, 6¼ in. deep, and 4 in. broad, the depth of the sand on which the stones are placed being 7¾ in. below the level of the street. The materials which compose a macadamised road vary according to traffic. The foundations of streets subjected to excessive traffic, such as the Boulevards, are formed of two beds of stone of small dimensions (2⅓ in. at the most on the surface of each stone); the first or upper bed is in porphyry of a thickness of 6 in., and the lower bed consists of a kind of gravel of the same thickness. These rest directly on the ground, and are bordered by the channelling. In order to facilitate foot traffic, crossings are constructed at certain points, especially where streets intersect each other. These crossings are made generally of asphalte.

For a long time past mastic asphalte, or pitch, or bitumen has been discontinued. Natural rock asphalte, compressed by heat, is the only material now used. With some exceptions the asphalte has been laid upon a bed of mortar of hydraulic lime of 4 in. in thickness, but it has been found that Portland cement is far preferable. The thickness of the asphalte after being compressed is 2 in., but in the less frequented streets a thickness of 1½ in. is sufficient.

Of wood pavements, of which trials have been made on a large scale, that of Norris or the Improved Wood Company has answered the best. The blocks are composed of Pitch Pine, and are placed on a double flooring of the same material. Consequently in this statement, the following four modes of paving will be dealt with, viz.:—

1. Paving in hard sandstone of small pieces.
2. Macadam, composed of porphyry and gravelly pebbles.
3. Compressed natural asphalte.
4. Improved wood paving.

Observations Relating to Street Paving.

The cost of constructing a square yard of paving is as follows, viz.:—

	s.	d.
For sandstone procured from l'Yetta	14	0
For porphyry and pebble gravel	6	0
For compressed asphalte of 2 in. in thickness. . .	13	0
For the improved wood paving	20	0

It is impossible to state accurately the cost of cleansing, but in general asphalte costs less than wood, and wood less than the ordinary pavement, and the latter is cheaper as regards cleansing than porphyry and pebble gravel.

The yearly cost of maintenance, including payment of first cost by instalments, is as follows:—

	s.	d.	
For ordinary pavements	0	10	
For porphyry and pebbles	6	0	
For asphalte	1	0	for streets.
" "	1	8	" crossings.
For wood	2	6	

As regards the last-mentioned pavement, it must be observed that Mr. Norris (Improved Wood Paving Company), in entering into the last contracts with the city of Paris, has undertaken to maintain such paving at the rate of 1s. 3d., that is to say, at much below half the actual cost, as proved by experience.

The wear depends upon the nature of the traffic, state of the weather, the gradient of the street, &c. In a level road the resisting power or traction averages:—

40 lb.	per ton	on ordinary paving.
60 "	"	on porphyry pebbles.
20 "	"	on asphalte.
12 "	"	on wood.

If the road be not level, a kilogramme or 2 lb. must be added or deducted for each millimètre of inclination.

The ordinary pavement lasts about twenty years. In each arrondissement one or two gangs of workmen are always occupied in keeping the same in repair. Important repairs, such as re-laying and re-dressing, are done by the contractors to the city of Paris. The roads much frequented require repairing nearly every six years. The paving in porphyry requires constant supervision, and the workmen belonging to the administration take care twice in each year to have all holes properly filled in; by the adoption of this plan great durability is secured. For the price which is paid to the contractors for asphalte paving they must make good all defects; in other words, they have to renew once in each year about two-fifteenths of the whole paving. The greater number of streets do not require repairing to the extent of one-fifteenth and a-half, or a tenth; in the much frequented thoroughfares, repairs to the extent of two-fifteenths and a-half are scarcely sufficient. Wood paving does not last more than five years.

The snow and frozen rain tend to make the sandstone and the Macadam pavements almost equally slippery, but the asphalte is rendered more so. In dry weather the Macadam is much less slippery than asphalte, and the latter a little less slippery than the sandstone. Wood paving seldom becomes slippery, not even during wet weather, as then the moisture penetrates into the wood, but does not render the surface thereof slippery. Accidents arise solely from slipperyness, but they are generally not so serious on wood pavement. On asphalte they are more serious, and on porphyry, pebble gravel, and sandstone pavement still more so.

There is less mud on asphalte than on wood, and less on the latter than on ordinary sandstone pavement; porphyry and gravel produce the most mud of all. Wood produces less dust than asphalte, and asphalte less than ordinary pavement; porphyry and pebble gravel produce the most. Asphalte is impermeable, and the ordinary pavement absorbs less than the porphyry; as to wood pavement, notwithstanding any defects therein, no complaint has ever been addressed to the administration touching its insanitary condition.

Porphyry pavement never decomposes, neither does the sandstone. Gas escaping from underground pipes renders asphalte soft and spongy, and moisture under its surface injures it. Wood suffers to a greater extent from these causes, and is also liable to rot away, especially in small by-streets where there is but little current of air. Water evaporates pretty quickly on asphalte, not so much on sandstone, and still less on porphyry. Wood absorbs moisture readily, and is preserved thereby.

Wood deadens the sound most. Macadam and asphalte are both noiseless to an extent. Sandstone pavement produces more noise than any other kind of pavement. From the foregoing remarks, it must be obvious that the noisiest pavement is the most injurious to health.

Wood and asphalte produce but little vibration; granite causes vibration, especially during the winter months, when under the influence of moisture, the mud accumulation being soft, the stones rub against each other and pulverise. The vibration of ordinary pavement is such as to shake the houses abutting upon the road, and it is only owing to the incompressibility of the sand that the stones disturbed by passing vehicles are not shaken out of position.

There is but little wear and tear on asphalte; very little on granite; a great deal on ordinary pavement, owing to the jolting it causes to the carriages; there is very little wear and tear on wood. Horses are subjected to most strain on asphalte, on account of there being no foothold. They are subjected to much less strain on the ordinary pavement than they are on the granite; the dust on the latter pavement is prejudicial to health; there is very little wear and tear on the wood. Persons travel with more comfort on asphalte than on wood, and with more comfort on wood than on granite, and much easier on granite than on ordinary cube pavement.

Under the head of safety, the granite occupies the first place, then the ordinary cube pavement, then the wood, and lastly the asphalte. In order to prevent accidents on the last-named pavements, sand should be spread over them; in cases of steep inclination, the ordinary cube pavement and the granite require sand to be spread over the surface.

A good paving should possess the following advantages: It should be impermeable; strong, but elastic; easy to repair and cleanse; smooth, without being slippery; exempt from dust and mud; noiseless. The most efficient and economical system of cleansing is by water; hand-sweeping is dearer than machine-sweeping; scraping by india-rubber apparatus is very advantageous as far as asphalte is concerned.

Watering by hose is the most economical; it can be done at half the cost of cart watering. By the hose system, the men in charge of the same can see exactly what portions of the roads require watering. Watering by hose is adopted in Paris in all the important thoroughfares.

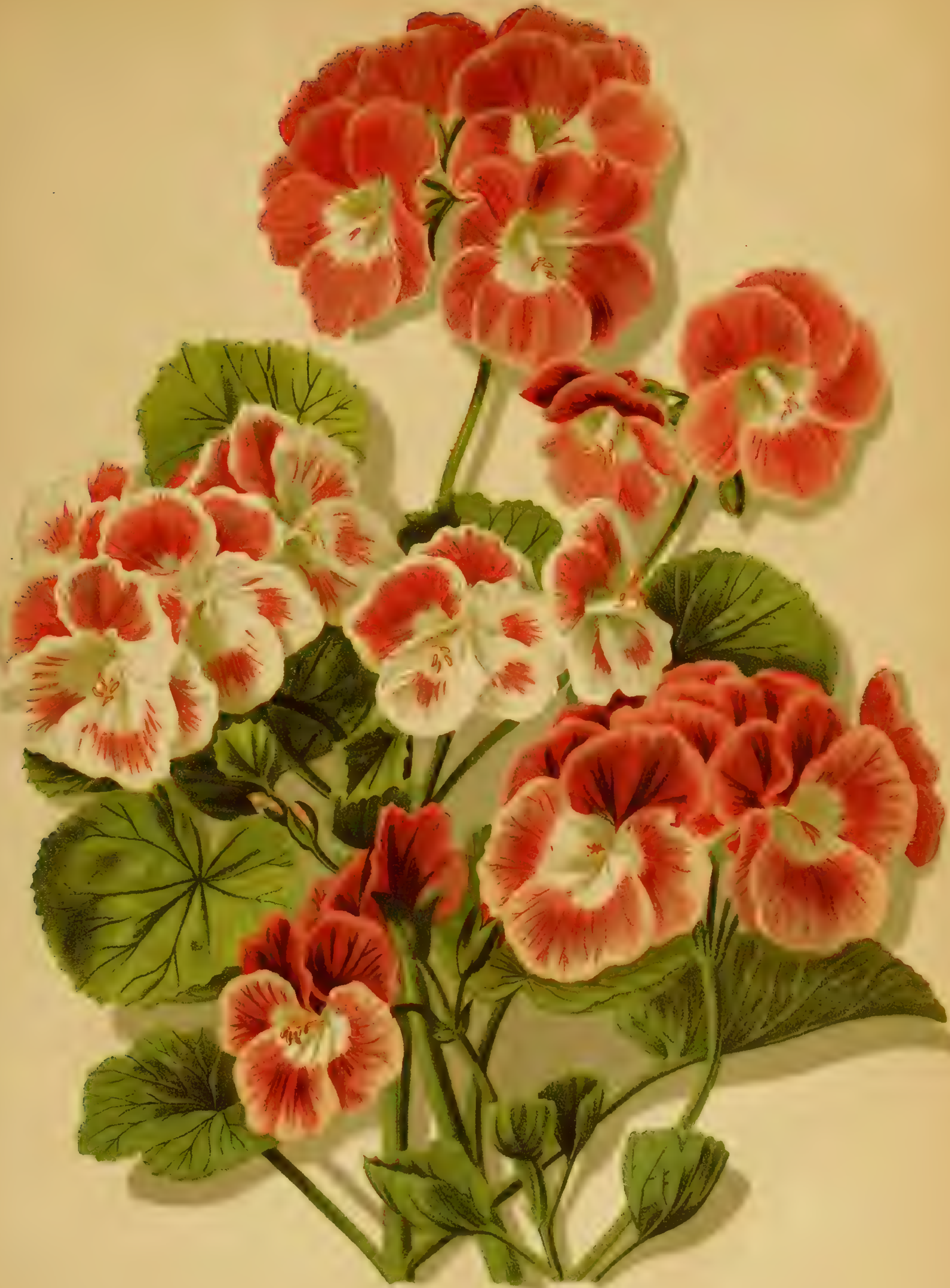
There are no tramways in Paris on wood pavement. Where tramways are laid on the granite pavement, the macadam is removed, and between the rails cubes are substituted for Macadam. If tramways be laid on asphalte the cubes are laid down on either side of the rails, and a strip of asphalte is left between the rails; the band of asphalte in question keeps the stones in a firm position.

PLATE CXXXVII.

FANCY PELARGONIUMS.

Drawn by MARIAN CHASE.

These constitute the prettiest and freest flowering section of Pelargoniums; and, although they are not so showy as the large-flowered section usually called show Pelargoniums, they are, nevertheless, very useful decorative subjects for the greenhouse or conservatory, and as cut flowers for small glasses they are charming. Small plants of them in 5-in. or 6-in. pots are the most useful for ordinary purposes, but plants of very large size may be grown in pots 8½ in. across, and these are usually trained purposely for public exhibition. It has been found best to graft the fancy varieties on stocks of the more robust large-flowered sorts, and the strongest-growing kinds of these, such as lilacinum, Charles Turner, Admiration, and others should be selected for the purpose. For ordinary purposes, however, it is easiest to raise plants from cuttings, which are usually put in when the plants are cut down in July or August, but I have found the month of May a good time to take cuttings. When the plants are raised at this time they make good specimens by the end of the year, and produce abundance of fine flowers the following season. My plan is this: I take the cuttings from a part of the plant where they are not missed, then cut across the stem just under a leaf; the leaf is then removed close to the stem; I then insert each cutting singly in the centre of a thumb-pot, using a soil composed of equal parts loam, leaf-mould, and sand. I plunge the pots in a hotbed with very little bottom-heat, just enough to afford a little warmth. When the roots have grown a little round the sides of the pots, I re-pot into 3-in. pots, using more loam in the compost than hitherto. The best place for the plants when potted is on a shelf near the glass in a greenhouse. Before potting the plants, see that they are quite moist at the roots, and then it will not be necessary to water them for three or four days after potting, and when water is applied it ought to be in sufficient quantity to thoroughly saturate all the soil in the pots. As fancy Pelargoniums grow at a rapid rate, they soon require to be potted a second time. The pots used must bear some proportion to the size and vigour of the plants; 5-in. or 6-in. pots will be found the most suitable. The soil for this and all other pottings for established plants should consist of six parts loam, two parts leaf-mould, and one of rotten cow manure, and to each barrow-load of this compost use three pints of crushed bones, a little pounded charcoal, and sufficient silver sand to keep the compost open. Drain the pots well, and over the drainage place the fibrous portion of the turf from which the earthy particles have been sifted. The compost should be pressed in firmly by the hand, but not with wooden or other rammers, as is sometimes done. During all stages of growth the plants ought to be kept rather close to the glass, and they require considerable attention in order to keep them in a healthy condition. Green fly should be destroyed by fumigation on its first appearance, and if the plants suffer from lack of sufficient moisture at the roots at any time, the result will be a number of yellow leaves a few days after. The leaves are sometimes affected with a disease called spot, which sadly disfigures them. I fancy this is caused by chilling the roots with cold, hard water applied in winter and in too large quantities. Fancy Pelargoniums are not nearly so hardy as the large-flowered sorts; they require a lighter compost, and should be kept rather warmer during winter. Their most desperate enemy is green fly, and this must be destroyed on its first appearance. Should any of this pest remain on the plants just before the flowers open, the house should be fumigated until every one is destroyed. Tobacco smoke applied after the flowers open causes the petals to drop. In order to retain the flowers as long as possible some shading should be placed over the glass during sunshine. A few of the finest varieties are Miss Goddard, Mrs. Pope, Mrs. Phipps, and Thomas King; these are new varieties sent out by Mr. Charles Turner, Slough; all of them have received first-class certificates; indeed, we are indebted to Mr. Turner for most of the improvements that have been made in regard to this class of plants. Of older sorts may be named Ann

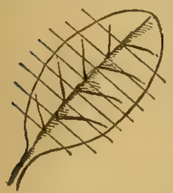


FANCY PELARGONIUMS. (TURNER)

Page, Countess of Dudley, East Lynn, Ellen Beck, Fanny Gair, Henry Bailey, Leotard, Mrs. Baker, Mrs. Dorling, Mrs. Hart, Mrs. Mendel, Princess Teck, Roi des Fantaisies, The Shah, Undine, and Vivandiére. J. Douglas.

PROPAGATING.

Gloxinias.—The best mode of increasing these is to take a pan with a hole in the bottom of it; put one crock over the hole and a little coarse peat in the bottom; then fill up with fine sandy peat soil, on which put ¼ in. of clean silver sand; take some of the largest and fleshiest leaves and cut them through just below the ribs, as shown in the annexed woodcut; make a small trench in the sand across the pan with the handle of the propagating knife, and place the pieces, rib part downwards, in the sand; draw the latter up close and level; then go on with the next row till the pan is full; sprinkle them over with water, and place them in a close, moist, bottom-heat, opening the glasses or lights every morning. They will soon form little bulbs and throw up young growths, when they may be potted off and be kept growing in a warm place. If a large quantity be required, and if the leaves are large, they may be cut up into smaller pieces, always taking care to cut just below the ribs or veins. H. H.



PROPAGATING PRIMULAS.

A remark recently made by Mr. Anderson-Henry respecting an apparent difficulty in propagating certain kinds of Primulas, by which P. denticulata was specially mentioned, might lead to the conclusion that this and similar kinds were doubtful propagators. Primula denticulata and its ally P. purpurea grow here in the open ground like weeds, and may be propagated freely. A single crown breaks into two, three, or four crowns the succeeding year, and these split up make from twelve to fifteen the next year, and so on; whilst plants that remain in the ground untouched will produce from six to twelve crowns in a couple of years. These Primulas will sometimes seed freely, especially under glass. I have now probably 500 plants in a seed-pan, the produce of a single truss of bloom of Primula purpurea, so that propagation is found to be rapid enough. To get the full beauty of these grand Himalayan Primulas, the plants should be lifted into large pots in the autumn and be put into a cold frame until the flowers are showing, and then be taken into the greenhouse; in this way they are glorious spring-flowering plants. Primula japonica can be propagated with great rapidity by seed, as this variety seeds freely, as also does the fine East Indian sikkimensis, which comes true in that way. I have endeavoured to secure a cross between these two kinds, using pollen of japonica, which is a thrum-eyed flower, on the styles of the flowers of P. sikkimensis, a pin-eyed variety. Seed-pods are set and ripening, but I cannot assert that the desired cross has been effected. Primula cortusoides amœna and its varieties seed but sparingly, as, although some of the pods make a great show of seeding, they are generally found barren, but then the plant makes amends by reason of its free root propagation, as a seedling will in the second year produce several roots and crowns, and in the fourth year about 100 crowns, and in a few more years multitudes. The most indifferent propagators, perhaps, are of the nivalis or viscosa section; these are allied to the Auricula group, and, like that popular florists' flower, can only be propagated by the slow process of division or the taking off of offshoots. These seed sparingly; indeed, it is rare that seed is found, and, therefore, they can never be abundant, especially as being somewhat miffy during the hot weather they now and then collapse. Keep the plants cool during the summer, and when the offshoots are strong enough, take them off with a sharp knife, fix them in a pan of sandy soil, and place them in a cold frame. In the case of old plants it is well to shake them quite free of soil and cut away all the old stock roots, leaving only the newest ones; then, potted up in fresh soil and in smaller pots, the plants will start afresh and with renewed health and vigour. Most of the farinosa section will seed freely, and it is well to keep a few seedlings always coming in, as the old plants will suddenly decay and disappear. Blooming, as most of the hardy Primulas do, early in the spring, it is more probable that seed will be got from plants flowering sheltered under glass than from those exposed to heavy rains and late frosts. If seed, therefore, be needed, the precaution of growing some in pots should not be neglected. A. D.

Cascades and Fountains in Pleasure Grounds.—Perhaps no feature in connection with the laying out of pleasure grounds and flower gardens requires nicer management than these. Everything depends upon the judgment of the operator and the choice of a situation whether the result will be a success or a failure. The passion for fountains and cascades in flower gardens has in many instances led to their being found in situations where they are nothing but an incongruity. A jet of water has itself a refreshing and pleasing effect almost anywhere on a warm summer day; but the "fountains" which so frequently form the central figures of our geometrical flower gardens have usually a rather depressing effect. Built of solid masonry, and standing in the midst of a dreary waste of gravel walks, or at best in the centre of a group of geometrical-shaped flower beds—and in ninety-nine cases in a hundred unable to play for want of water—they are almost meaningless objects, wholly out of place. Naiads, mermaids, dolphins, and other mythical figures and fishes, bleaching in the sun among a lot of scarlet Geraniums and Calceolarias, &c., is surely as absurd an incongruity as could possibly be conceived. The first essential in a fountain or a cascade is water, and this is just what is usually wanting. We are acquainted with numbers of flower gardens containing fountains where there is hardly sufficient water to play them for one week in the year, and there the nude figures stand, blistering in the sun and blackened with soot, a melancholy testimony of the incompetency and stupidity of the designer. And quite as often, when the fountain is playing, its noblest effort is a disappointing squirt, which might be easily surpassed by a garden engine or a common brass syringe.—J. S.

Cool Treatment of Lobelias for Bedding.—Where anything like exactness of outline is necessary, Lobelias should always be raised from cuttings, as seedlings cannot be relied upon to produce a compact mass without pinching or cutting. Our annual stock is from 4000 to 5000, and, except for keeping the stock plants through the winter, we do not now use either pots or boxes, but simply dibble the cuttings into very slight hotbeds made up a few days before the cuttings are ready. The hotbeds are generally composed of lawn mowings, mixed with a few leaves or other rubbish to keep down and steady the heat. As regards the stock plants, about six or eight dozen of the latest cuttings are potted in small pots in spring, plunged in the open ground, and have the flowers pinched off during summer. About August they are shifted into 4½-in. pots and are wintered on a back shelf in a cool house just under the ventilators, where in fine weather they have full exposure. In this position the growth made is wonderfully robust, and when the cuttings are taken off in March and April, a very small amount of bottom-heat will suffice to root them quickly. It is always a good plan to have a stock to work from in proportion to the number of plants required; as, although it is possible to work off a wonderful number from a few plants, it is not wise to do so, for over-propagation is an evil, and leads to deterioration in vigour; indeed, I have no doubt many of the cases of plants dying off in summer, and leaving an unsightly blank in the beds, may be traced to this cause of forcing and over-production. We strike Alternantheras, Coleus, &c., in the same way, and produce far better plants, with less than one-tenth of the labour, than by potting; and the plants, being close to the glass, assume a brighter colour, and are stronger, hardier, and better enabled to resist vicissitudes of weather and climate. Plants grown in this way may be planted out ten days earlier than when they have been grown in close, warm houses.—E. H.

Smilax maculata.—For covering low walls in a warm position this is one of the best of plants. It grows freely, its tendrils cling firmly to the wall, and its dense masses of narrow, pointed, glistening bronze and white-spotted leaves have a pleasing effect.—V.

Delphinium cardinale.—This very distinct Larkspur is, I consider, even more beautiful than its dwarf congener, D. nudicaule, as it is much more robust in habit, forming a pyramid from 4 ft. to 6 ft. in height. The flowers are larger and of a more brilliant scarlet, and they last a long while in good condition. A place should be found for it in even the most select collections of hardy plants.—A.

GARDENING FOR THE WEEK.

Flower Garden.

THE staking and tying up of climbers and the pegging down of dwarf-growing plants are operations which will require constant attention. Fine-foliaged, or what are known as sub-tropical, plants should, when necessary, be supplied with abundance of water, and the surface of the beds should be well mulched with good rich manure to check evaporation and assist in the production of a fine, healthy, luxuriant leafage, which constitutes the principal beauty and attraction of such plants. The unsightliness of the manure may be easily concealed by the mowings of lawns, and the margins of the beds should be neatly covered with green Moss, which the occasional waterings will keep in good condition. Wherever carpet bedding is practised this must also have constant attention in the way of pinching in and regulating the growth of the various plants employed for that purpose so as to preserve the outlines and patterns of the beds. All flowering shrubs, as soon as they go out of bloom, should have dead and decaying flowers removed, and when necessary the plants should be cut back. Box edgings may also now be trimmed, and wherever divisional lines are formed by means of Sweet Brier or the common evergreen Privet they should also now be cut. Few plants are better suited for forming low ornamental hedges than the Privet, but, being of free growth, it requires to be clipped several times during the season. The common Yew is also an excellent hedge plant, but it is of slow growth. There are, however, several other hardy Coniferous trees to which this objection does not apply, such as Cupressus Lawsoniana, Thuja Lobbi, Thujopsis borealis, &c., all of which are well suited for ornamental hedges or screens. Where such already exist the present is the most suitable time for cutting or rather clipping them; but when such hedges or screens consist of large-leaved plants, such as the common or Portugal Laurel, it is then advisable to prune with the knife, in order to avoid, as much as possible, the mutilation of the leaves. Dwarf Coniferous trees and ornamental shrubs of various sorts are frequently used in the embellishment of Italian and geometrical gardens, and, where that is the case, it is generally necessary to preserve a certain amount of uniformity as regards shape and size; and the present is a suitable time to attend to the cutting or trimming of such specimens. Among plants well suited for this purpose are the Sweet Bay, the Portugal Laurel, the Laurustinus, &c., trained in the form of standards or otherwise, together with various sorts of Cypresses and Junipers, and other plants of a drooping habit of growth; also the Irish Yew (Taxus fastigiata), generally trained in the form of pyramids, and on which are sometimes grafted the gold and silver-striped varieties of the Taxus baccata or common Yew, a union which produces a very striking effect, as do also trained specimens of the fine-foliaged Acer Negundo variegatum, which, although deciduous, produces, nevertheless, during the summer months, a very pleasing contrast when associated with sombre or dark-foliaged plants. Continue to extract Plantains and other broad-leaved plants from lawns, and occasionally take an opportunity, after a considerable rainfall, to well roll all dressed ground. This will, however, seldom be necessary where a heavy horse machine is used, and where that is employed avoid by all means a too close approach to fine specimen Coniferous or other trees upon the lawn. Whatever portion of surface the mowing machine may not have reached should be neatly cut with the scythe on the following morning; at the same time the margins of walks and clumps should be trimmed or clipped with the Grass-edging shears, an operation quite indispensable to neatness and high keeping.

Phloxes.—These beautiful summer-flowering occupants of the herbaceous border, if grown in a situation where the roots of deciduous trees or evergreens can interfere with them, require plenty of water at and about the time of their opening their flowers. They are strong-rooted plants, and need a good deal of sustenance. If allowed to become dry they are sure to suffer from the attacks of black thrips, which get into and spoil the flowers as soon as they open. Any plant, either flowering or fruit-bearing, grown in the open air that is attacked with thrips, black or yellow, can only be relieved from them by continuous use of the syringe or garden engine, for they will not remain where there is much moisture. Plants that are allowed to flag through want of water at the root appear most liable to their attacks.

Gladioli and Marigolds.—A slight mulching of an inch or so of rotten manure over the surface of Gladiolus beds will benefit them, and will help to keep the soil moist and the roots cool, which has a considerable influence in preventing the disease. Tie the plants up before they get so large as to be acted upon by the wind, using for this purpose a neat stick, such as a stout dry Willow or Hazel, the thickness of one's finger; and be careful, when inserting it, not to thrust it down so near the roots as to injure them. There are few more handsome and continuous border flowers than the French Marigold, blooming, as it does, from the present time until it is cut down by frost. Those who happen to have a good strain of striped or edged kinds, should now, as the plants come into flower, remove all that are single or semi-double. This not only greatly improves the appearance of what are left, but is also necessary in saving seed, which is deteriorated by the presence of poor flowers. No seed should be saved except from the best double blooms. If the strain is too dark, or does not possess a sufficient number of the rich yellow-striped forms, or is deficient in size, a few plants of the African Yellow should be grown near, or amongst, them. These will cross with and improve the French varieties both in colour and size; but this must not be repeated every year, or they will become too yellow.

Asters.—Do not allow these to grow too thickly, or the flowers will be small, and the plants soon become exhausted. If they show signs of weakness, through the ground not being rich enough, assist them with manure water. There is no plant less able than Asters to bear the effect of aphides, whose presence is easily detected by the leaves curling up. A good washing with Tobacco water is the best remedy, and this should be applied as soon as the insects are detected, or the plants will be irreparably spoilt. The tall-growing kinds if at all in an exposed situation, will require a small stick and tie to each plant.

Hardy Fernery.—Ferns, unless well looked to and properly supplied with water, will soon present a shabby appearance, as thrips are sure to attack them. Moisture-loving kinds, such as the different varieties of Athyriums and the majestic-looking Struthiopteris will be the first to suffer, and therefore, where these have not a cool damp soil afforded them to grow in, frequent and copious waterings will be necessary to keep them in health. These should be applied overhead, so as to thoroughly wet the fronds, or where that cannot conveniently be done the garden engine or syringe may be advantageously employed to give them a thorough wetting; if this can be done every night it will considerably prolong their freshness and beauty. Where bulbous plants and others of a semi-wild character are grown in suitable portions of the hardy Fernery, as they always should be, the less interference they receive in the way of trimming or removal of leaves the greater will be their strength and capacity for blooming next year. It is a great mistake, for the sake of appearances, to denude such plants of their foliage, as is frequently the case long before it has died off and ceased to be useful, the effect being to stop the maturation of the bulb or crown of the plant, as the case may be, and prevent the formation of flowers.

Indoor Plant Department.

Conservatories.—The numerous choice stove plants available at this season for decorating both greenhouses and conservatories will afford more richness and variety, both in foliage and flower, than is attainable in these comparatively cool houses at any other season of the year; and as it will not be safe to allow choice specimens of these to remain in such structures for any lengthened period, it will be well to use them as extensively as possible during the next month or two, in order that the pleasure to be derived from them may be enjoyed without having to go into the strong moist heat of the stove to view them. By means of frequent changes and occasional re arrangement much interest may be imparted and fresh effects produced in such houses; and, in addition to all this, the plants will be benefited by being turned and changed about, so as to expose a fresh side to the light. Were this more attended to, less training and tying would be requisite, and the use of objectionable stakes puncturing the ball might then in a great measure be dispensed with. Before placing choice specimens of stove plants in the conservatory, however, see that they are properly hardened, and select for them the best positions for showing them off to advantage, taking care at the same time that they are out of the way of cold draughts. To ensure their safety, keep them as dry at the root as the plants will bear without flagging or shedding their flowers; thus treated, they will endure the change much better than if they were freely supplied with water, wet and cold, at the same time, having a paralysing effect on them. Keep roof-climbers properly thinned and regulated, otherwise, owing to the rapid growth which they are now making, they will soon become entangled. It is rare that conservatory borders are of sufficient depth or extent to keep in health such fast-growing, free-flowering plants as Begonias, Tacsonias, &c.; and where any of these plants are at all pinched for root-room, the deficiency in soil must be made up by giving an abundant supply of water, or red spider will soon make its appearance, and when once this pest becomes established, its removal is a work of some difficulty.

Camellias.—Most Camellias have their wood and flower-buds by this time sufficiently developed to necessitate removal to cooler quarters, so as to get their wood well ripened. Examine spring-grafted and inarched plants, and unfasten all ligatures from such as have united and are growing, but still keep them in rather close quarters Do not entirely head back the stocks to the scions until the latter have fairly started into growth, but shorten any too vigorous growth on the part of the stock. The end of this month, and for six weeks afterwards, is a good time for grafting Camellias; therefore have good, healthy, and well-established stocks in readiness, also a close pit or frame inside a cool house for the reception of the "worked" plants. They require dense shading for a time, and any that are too tall may be laid on their sides or in a sloping direction.

Daphne indica should, if possible, be kept on growing in a pit where a little closer atmosphere than that of an ordinary greenhouse is maintained, or it may be placed on the front shelf of a late Vinery, as the warm, moist atmosphere produced by syringing and closing the house early in the afternoon will completely answer its requirements; so treated it will make double the amount of growth that it would in a greenhouse, which is so far an advantage that it admits of more of the flowers being cut than when the plant makes less progress, although, under no conditions should too many shoots be removed when in bloom. This plant ought never to be exposed to the open air, as it suffers if the soil becomes too wet by exposure to rains As generally seen, it is of medium growth, and even by those whose glass accommodation is limited half-a dozen plants will not be too many to grow, and by keeping a portion through the winter a little warmer than others a long succession of flowers may be secured. It is essential never to overpot or overwater it.

Pleroma elegans.—This easily-grown and showy plant strikes as freely as a Verbena from the half-ripened shoots put in about the present time. They are best struck singly in small pots, drained and filled with a mixture of sifted loam, peat, and sand. Kept moist, covered with a bell-glass, shaded, and placed on an ordinary hotbed, they will root in a few weeks; after that they may be fully exposed, the points of the shoots pinched out to induce them to break, and subjected to greenhouse treatment for a couple of years. In the second summer they should be placed out-of-doors in the open air at the shady side of a tree or wall that will prevent the sun in the middle of the day shining upon their leaves, which are somewhat impatient of its direct influence. As they require more room move them on into 8-in. or 10-in. pots. So treated, they will bloom from almost every shoot, producing flowers which in colour are not equalled by anything in cultivation.

Pits and Frames.—Where pot plants are grown in pits they must be kept well up to the glass or they are apt to become drawn. Plants in such structures are more liable to get neglected as regards water than in houses, where they can be more readily examined. Under such circumstances, too, insects are more likely to escape observation than in more open quarters, and therefore must be looked after more closely. In addition to supplying pot plants with sufficient water at the roots, it is also requisite, while active growth is progressing, to keep the floors of the pits or frames on which they stand well and regularly moistened, for if this be not attended to the atmosphere during hot sunny weather becomes so dry that healthy growth is out of the question.

Hardy Fruit.

Strawberries.—Old Strawberry beds that have become exhausted should be dug over as soon as the fruit is gathered. The best method is to cut them off with the spade just below the collar and bury them as the work goes on, opening a trench for the purpose sufficiently wide at the commencement The old tops thus dug under will benefit the ground, especially if it be of a heavy character. There is no better crop to follow Strawberries, when dug up at this time of the year, than Turnips, which should be sown as soon as rain falls after the ground is prepared.

Pears and Plums on walls should have their summer shoots removed as soon as they have ceased to grow, a state at which the trees will arrive sooner or later, according to the earliness or lateness of the locality in which they are grown The object in taking these summer shoots off is to give the tree a better opportunity to form fruit-buds for the ensuing year, and to expose these to the ripening influence of sun and air; but if such shoots be removed too soon, *i.e.*, whilst there is a considerable flow of sap in the trees, more harm than good will be done, as the trees will start again into growth. The usual way is to break the breast-wood (for that is the term usually applied to these summer shoots) off with the thumb laid across the blade of the pruning-knife, or a stout pair of ordinary nippers may be used for the purpose, severing the shoots at about ½ in. or ¾ in. above the point from which they spring.

Kitchen Garden.

Sowing Cabbages.—Those who have not had an opportunity of observing the marked influence which the difference of a few days in sowing the seeds of some vegetables exercises over the future crop are apt to smile at the fixed dates at which the last generation of gardeners used to have for sowing in spring and autumn. A little reflection will convince any one that the difference of a single day or two in committing the seed to the ground cannot be of vital importance; yet it is well not to treat old customs too lightly. The object which those who have preceded us had in view in fixing arbitrary dates was simply to prevent either too early or too late sowing, and thus ensure punctuality. For instance, in sowing Cabbage seed during the present month for the early spring supply, a difference of ten days has an important influence upon the time when the crop will be ready, and also affects the varieties grown. In the northern parts of the kingdom, where hardy sorts, such as the Enfield Market, stand the winter best, the seeds of these should be sown as soon as the 20th of the present month is passed; delay beyond this will cause the crop to be fit for use later in the spring. If sown sooner many of the plants will run to seed instead of hearting at the proper time. Where early varieties, such as the York, are grown, they must not be sown until eight or ten days later, or the plants will bolt. In the southern parts of the kingdom Cabbages should be sown a week later than the above dates, the later kinds being put in first and the earliest last. Where these directions are followed, the disappointment of seeding instead of hearting will not be experienced. Select an open situation where the plants, from the time they are up, will get plenty of light and air, for the drawn and weakly plants sown near trees or high walls are not calculated to stand a severe winter.

Celery and Scarlet Runners.—Where the seeds of Celery were sown early and the plants prepared as directed, with a view to obtaining an early supply, they will now be growing fast. Where the ground was well enriched there will not have been any necessity for watering; but where there has been a deficiency of manure, weakly applications of manure water will be required. Should Celery become at all affected with green fly, to which it is very subject if grown near anything else that is troubled with the insect, its presence will be indicated by the leaves curling up and an unhealthy, stunted appearance of the plants. So soon as any aphides are found give a good washing with soapy water from the wash-house, applying it with the syringe. To be effectual, like all other applications of a similar nature, it must reach every part of the plants above ground, for, even upon such portions of the leaves as harbour no living insects, it is more than likely that there are eggs which will quickly come to life. Should the fly not be killed by one dressing, give a second within a few days. Scarlet Runners grown without sticks should have their shoots repeatedly nipped out as they push up; this will induce them to break afresh and continue flowering.

Extracts from my Diary.

July 22.—Sowing black-seeded Brown Cos Lettuce for winter use. Potting on small Cinerarias. Planting out Lettuces and Endive. Earthing up Cardoons. Lifting pickling Onions and spreading them out to dry. Sticking Peas and getting them earthed up, and topping those which are growing above the sticks. Picking Laxton's Unique and William I. Peas for seed. Getting large rough frames ready for sowing late Peas and late dwarf French-Beans so as to protect them from the early autumn frosts. Nailing and tying in Roses on walls and picking off all dead flowers. Hoeing and weeding amongst Strawberries, and cutting away all runners that are not required for planting.

July 23.—Sowing Laxton's Omega and Unique Peas. Budding Roses, and giving them a good mulching with rotten manure. Hand-weeding herbaceous borders and giving them a general clean up. Watering Celery; also Leeks, Parsley, Turnips, &c. Gathering Black Currants for preserving. Clearing out Mushroom house and getting it whitewashed. Giving the Peach trees in early house a good watering night and morning with the garden engine to keep down red spider and other insects. Lifting early sorts of Potatoes and spreading them out in the sun to ripen them well for seed next season.

July 24.—Putting in Pink and Carnation pipings under hand-lights. Gathering Apricots for preserving. Earthing up Celery when the soil is dry and in workable condition. Weeding and picking over carpet bedding borders. Making up new Mushroom bed in the open ground Looking over Marrows and Gherkins, and closely stopping them all. Digging up, manuring, and watering borders previous to sowing with Wheeler's Imperial Cabbage, and stopping and nailing in the shoots of Tomatoes on walls. Nailing in all the leading shoots of Peaches, Nectarines, Apricots and Cherries. Looking over Cucumbers and Melons, watering them and stopping them where required, and renovating the linings round all manure frames.

July 25.—Potting on Celosias, Coleuses, and Begonias. Picking off early blooms and pegging down the branches of exhibition Balsams. Stopping the laterals through all Vineries and giving late houses a good soaking with guano water inside and out. Staking and tying in plants on borders. Training out and pegging down bedding plants and clearing away decaying leaves and flowers. Thinning out Turnips, Carrots, and Spinach. Cutting back Laurels in pleasure grounds where overgrowing walks. Watering Lettuce and Endive beds, and hoeing amongst all growing crops.

July 26.—Putting in Phlox and Pelargonium cuttings. Tying out and picking the early blooms off exhibition Fuchsias. Weeding, hoeing, and afterwards mulching Aster beds. Stopping and tying out Dahlias and thinning out the blooms where required for exhibition. Cutting back Ivy on walls where overgrowing windows. Clearing off Peas and manuring and digging the ground ready for autumn Cabbages. Getting new mould into cold pits and pricking them out with Parsley roots for winter use. Cutting back the breastwood and nailing in the leaders of Plums and Pears. Gathering Raspberries and Red and White Currants for preserving.

July 27.—Pricking off a late batch of Primulas and Cinerarias. Transplanting Silenes and Forget-me-nots from seed beds; also seeding Violas. Watering the Pines all through and putting sticks to any that require it. Cleaning up mould yards. Planting out a large breadth of Savoys for small heads; also Coleworts. Mulching late Peas with rotten manure. Getting all Pine pots washed and getting in the soil ready for potting. Giving Scarlet Runner Beans a good soaking of manure water. Weeding and cleaning Box edgings in garden walks. Watering Celery, Cardoons, Cauliflowers, and Tomatoes. Mowing and cleaning up the pleasure grounds and rolling down all gravel and turf that require it. Fruit in use for dessert: Pines, Grapes, Melons, Figs, Peaches, Nectarines, Strawberries, Cherries, Raspberries, Gooseberries, and Currants.—W. G. P., *Dorset*.

Wild Flowers for Table Decoration.—At the Woodbridge Horticultural Society's show, held on July 11, amongst centre pieces for table decoration were some pretty arrangements of wild flowers. Of flowers and fruits combined I also noticed some good examples, but it is to the wild flowers I wish to direct attention. Amongst these Water Lilies, Corn-flowers, and Forget-me-nots are now abundant, and there is also an endless variety of foliage that almost possesses the fairy-like lightness of our native Grasses. With such materials one can scarcely avoid producing a graceful effect. Water bouquets were also largely represented, and for this purpose Water Lilies, Forget-me-nots, and other aquatic flowers looked far more at home than such subjects as Gloxinias and stove Ferns, which are frequently employed for that purpose. However beautiful exotic or even native flowers may be in themselves, their beauty may be greatly enhanced by having some regard to natural position and surroundings. A Water Lily should evidently be in a situation where it can be looked down on, while a climbing plant—like a Tacsonia—can only be seen to advantage when viewed from below.—J. Groom.

GARDEN BOTANY.

(Continued from p. 36.)

Number of Sepals.—It has already been mentioned that the parts of the flower of dicotyledons are usually in fours or fives, or multiples of these numbers, and this, of course, would apply to the calyx as well as the corolla, and stamens and carpels. Perhaps as many as 80 per cent. or even 90 per cent. of dicotyledons have a pentamerous (five-parted) calyx. The number of sepals forming the gamosepalous calyx can usually be determined by the number of lobes. The Fuchsia and most of the members of the same order have a tetramerous, or four-parted, calyx, but the Enchanter's Nightshade, also belonging to the same family, has only two sepals, two petals, &c. Then there is the small family, the Portulaceæ (Portulaca and Calandrinia), which is characterised by having a calyx of only two sepals. The flowers of Calycanthus and Chimonanthus exhibit a gradual transition from bracts to sepals, and sepals to petals, so that it is impossible to know where one ceases and the other begins.

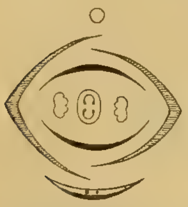


Fig. 325.—Diagram of the flower of Circæa lutetiana; the two sepals lateral, and the two petals anterior and posterior.

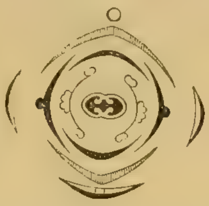


Fig. 326.—Diagram of the flower of Diclytra formosa; one of the sepals anterior and the other posterior.

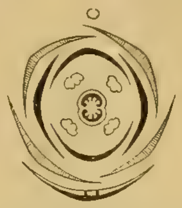


Fig. 327.—Diagram of the flower of Plantago major; neither of the four sepals with its median line anterior or posterior.

Position of the Sepals.—The accompanying floral diagrams illustrate some of the variations in the relative position of the sepals. When the calyx consists of only two sepals, they are either lateral, one on either side to the right and left, as in Circæa lutetiana (Enchanter's Nightshade—fig. 325), or one posterior, that is, next the mother axis, and the other anterior, as in Diclytra formosa (fig. 326). When there are four sepals, they are commonly arranged—one posterior, one anterior, and two lateral; but in Plantago (fig. 327) the centre of neither of the petals is in the same vertical plane as the centre of the axis, two of them being to the right of it, and two to the left. When the calyx is composed of five sepals, the odd one is almost always posterior, or next to the axis, as in Linum (fig. 329), though in the Leguminosæ the odd one is anterior (fig. 328).

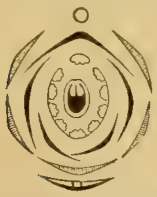


Fig. 328.—Diagram of the flower of Phaseolus, showing the odd sepal is anterior.

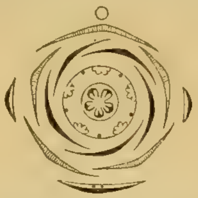


Fig. 329.—Diagram of the flower of Linum, showing the odd sepal is posterior, or next to the axis.

The Corolla.

Almost all that has been said respecting the calyx applies equally to the corolla, that is to say, there are regular and irregular polypetalous and gamopetalous corollas, and the position of the petals with respect to the axis is equally variable, as well as their number. But the cohesion and absence of cohesion of the petals are characters of more importance in systematic botany, as dicotyledons, having a distinct calyx and corolla, are divided into two groups, the polypetalæ and gamopetalæ (monopetalæ of some botanists). The natural orders belonging to the former are characterised by having, with few exceptions, the petals free to the base, whilst those of the latter group are almost invariably more or less united. There is, moreover, a greater variety in the shape of the corolla than there is of the calyx, or at least the variations are more striking. There are several leading types of polypetalous corollas which we will briefly describe. One of the most striking is the papilionaceous type (figs. 330 and 331), and it is characteristic of a larger number of species than any other polypetalous corolla. It is irregular, and the upper or posterior petal is usually larger than the others, which it overlaps in the bud, both of its edges being outside of the others. The upper petal of a papilionaceous corolla is the standard, the two lateral ones the wings, and the two lower, which cohere more or less, form the keel. It is important to remember this distinction of the petals, because it is from various modifications in the shape and the relative sizes of the petals that some of the generic characters are drawn. It is almost superfluous to give examples of this type, as they abound in the field and in the garden. The Furze, Broom, Pea, Bean, Wistaria, Clover, Lupin, &c., are of this type. Another type of polypetalous corolla characteristic of a large number of familiar plants is the cruciform (fig. 332). This has four petals, commonly consisting of an erect, stalk-like part (the claw) and a spreading limb. Cabbage, Candytuft, Stock, Wallflower, Arabis, &c., have a cruciform corolla. The polypetalous corolla of the Pink family (fig. 333) is similar to the cruciform, but it has five petals. All three of the types described have the petals more or less distinctly clawed. The Rosaceous type (fig. 335) has sessile petals, which spread from the base; this type is represented in many natural orders, and is not peculiar to members of the

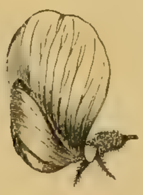


Fig. 330.—Papilionaceous corolla.

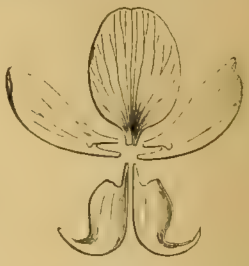


Fig. 331. — Irregular polypetalous (papilionaceous) corolla spread open; the upper petal is termed the "standard," the lateral "wings," and the two lower more or less combined form the keel.

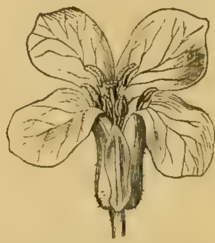


Fig. 332.—Flower of Wallflower, showing the cruciform type of corolla.

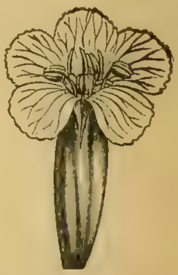


Fig. 333.—Flower of Silene pendula.

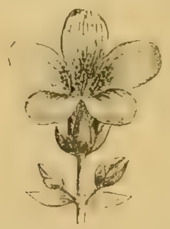


Fig. 334.—Flower of Hypericum ægyptiacum; corolla polypetalous and regular.

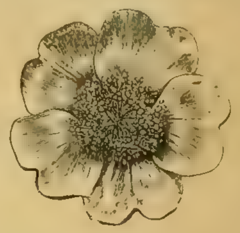


Fig. 335.—Flower of Geum, showing the rosaceous type of corolla.

Rosaceæ. The corolla of Aconite consists of two singularly shaped petals enclosed in the hood-shaped petaloid sepal (see fig. 336, where the sepal is removed to show the petals). In Polygala two of the sepals are much larger than the others and coloured like petals, and there are only three petals, and they adhere to the stamens. The two larger sepals are called the wings, just as the two lateral petals are of a papilionaceous corolla, and they persist and enclose the seed vessel. Gamopetalous corollas offer a great diversity of shapes, but there are some very distinct types. The corolla of the Labiatæ (Salvia family) is usually two-lipped (bilabiate)—fig. 337—as it is also in many Acanthaceæ (Justicia), Scrophulariaceæ (Pedicularis), and Verbenaceæ; but there is every degree, from a nearly regular shape to the very decidedly two-lipped corolla of Salvia bicolor (fig. 337). When the two lips meet and enclose the stamens (Antirrhinum, for example), the corolla is personate. The ligulate corolla (fig. 338) is characteristic of the Compositæ (see paragraph on the capitulum); in the Dandelion all the flowers of the head are ligulate; in the Daisy only the outer ones, the others being tubular. Honeysuckles have an irregular corolla something of the same shape. Among regular gamopetalous corollas are the campanulate (bell-shaped), as of many Campanulas, Convolvulus, &c.; the infundibuliform (funnel-shaped), fig. 339; the tubular (fig. 341); the vase-shaped (fig. 342); the salver-shaped (fig. 343); the urceolate (fig. 344); and the rotate (fig. 345). There is no very precise meaning attached to these terms, and campanulate corollas are as variable in form, or perhaps more so than bells.

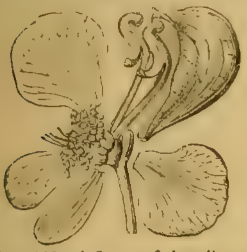


Fig. 336.—A flower of Aconite, with the sepals detached.

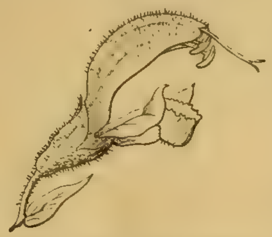


Fig. 337.—Flower of Salvia bicolor, with two-lipped corolla.

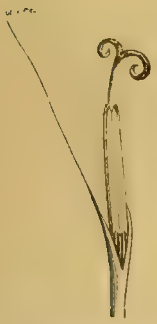


Fig. 338.—Ligulate corolla of the Compositæ.

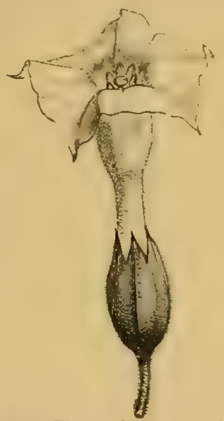


Fig. 339.—Flower of Tobacco, with an infundibuliform, or funnel-shaped corolla.

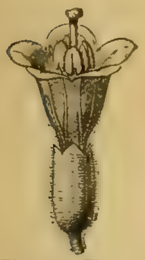


Fig. 340.—Flower of Hyoscyamus albus; corolla gamopetalous and regular.

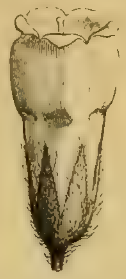


Fig. 341.—Flower of Symphytum officinale, with a tubular corolla.

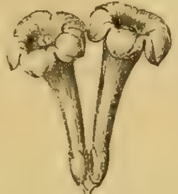


Fig. 342.—Flowers of Cestrum; corolla gamopetalous and regular.

Appendages of Petals.—The petals of the Ragged Robin, Campion, and many of the same family (Caryophyllaceæ) are furnished with a scale at the base of the limb; and most of the Boraginaceæ (Myosotis, Borago, Symphytum) have the throat of the tube of the corolla closed by scales. Cardiospermum (fig. 346) has the petals provided with a crested scale; the famous Coca tree has the petals furnished with two lateral crested scales (fig. 347); and the petals of the Buttercup (fig. 348) have a small glandular body at the base.

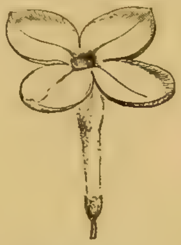


Fig. 343.—Flower of Lilac, with hypocrateriform or salver-shaped corolla.

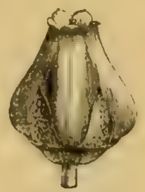


Fig. 344.—Flower of Arbutus Unedo, with an urceolate or urn-shaped corolla.

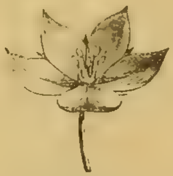


Fig. 345.—Flower of Lysimachia, with a rotate corolla.

Insertion of Petals.—When the calyx is adherent to the top of the ovary, the petals appear to spring from the base of the limb of the calyx, and are what is termed epigynous; when the petals are attached to a free calyx, or a calyx that is not adherent to the top of the ovary, they are perigynous; and when they spring from the enlarged floral axis itself, free from the calyx and below the gynœcium, they are hypogynous. The same terms apply to the insertion of stamens, though in both cases it may be the result of adhesion commencing in a very early stage of development.

Absence and Suppression of Petals.—When a species of a genus normally having petals is destitute of them it is said to be apetalous. Most of the species of Fuchsia, for example, are provided with petals, but there are about six apetalous species. In Amorpha fruticosa, a shrub belonging to the Leguminosæ (sub-order, Papilionaceæ), only the upper petal or standard is developed, all the others being suppressed. Clematis and Anemone are referred to the Ranunculaceæ, although they are apetalous, because in all other essential characters they agree with Ranunculus, &c. In these genera the sepals simulate petals.

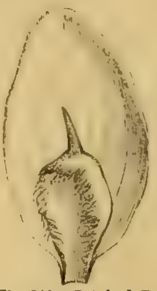


Fig. 346.—Petal of Cardiospermum Halicacabum, furnished with a central crested scale.

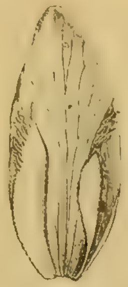


Fig. 347.—Petal of Erythroxylon coca, furnished with two lateral crested scales.

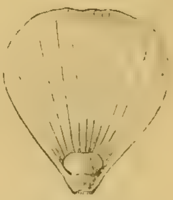


Fig. 348.—Petal of Ranunculus, furnished with a gland at the base.

The Perianth.

A general definition of the perianth, as the term is employed in descriptive botany, is given in a previous paragraph, and we need only repeat here that in practice it is applied to the floral envelope when it is in one whorl or series, or if in more than one whorl the parts of both whorls are similar in shape and colouring. The perianth is free and polyphyllous or gamophyllous, or it is adherent to the ovary, and it is either regular or irregular in form. The perianth of the Cupuliferæ (see also preceding paragraph on the involucre of this family) specially deserves our notice, as its real nature is likely to be misunderstood. In the Oak and Beech the perianth is adherent to the ovary, but though this is not very apparent in the mature Acorn or Beech Mast, it can be traced by beginning at the flowering stage. Several dicotyledonous orders have a single perianth, as the Thymelaceæ (Daphne and Pimelea); Proteaceæ (Banksia and Grevillea), with the stamens superposed on (opposite to) the leaves of the perianth; the Urticaceæ (Stinging Nettle—fig. 349); and the Polygonaceæ (Rhubarb—fig. 350). The free perianth is either deciduous or persistent; in Muhlenbeckia (fig. 351) it is persistent, and becomes fleshy. The Aristolochiaceæ (Aristolochia, Asarum) have an irregular gamophyllous adherent perianth of very variable shape (figs. 352 and 353). There are two principal types of perianth in monocotyledons: the petaloid (Tulip, Hyacinth, Crocus, &c.) and the glumaceous (Grasses and Sedges). The former is usually of some other colour than green, and often very brilliantly coloured; and one of the principal things to note is, whether it is free from the ovary, as in Lilies and Tulips, or adherent to it, as in Irises, Snowdrop, and Narcissus.

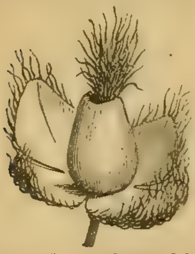


Fig. 349.—Female flower of Stinging Nettle, having a four-leaved perianth.

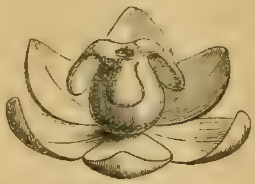


Fig. 350.—Female flower of Rhubarb, with a six-leaved perianth.

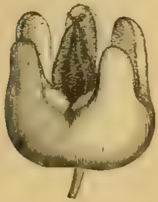


Fig. 351.—Fleshy perianth of Muhlenbeckia surrounding the fruit.

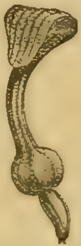


Fig. 352.—Irregular gamophyllous perianth of Aristolochia clematitis.

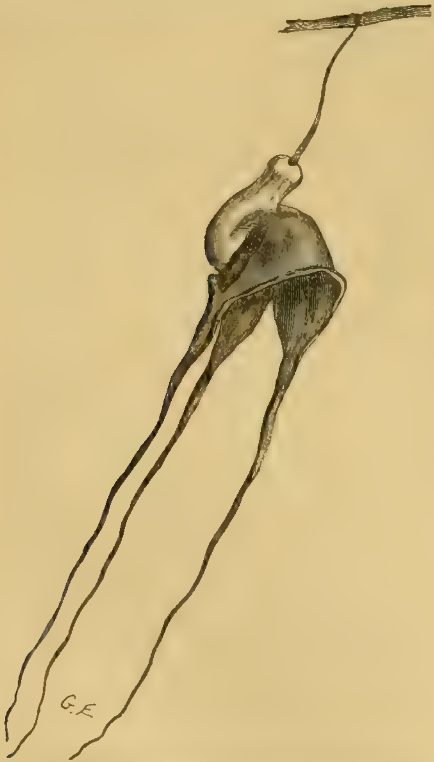


Fig. 353.—Perianth of Aristolochia tricaudata.

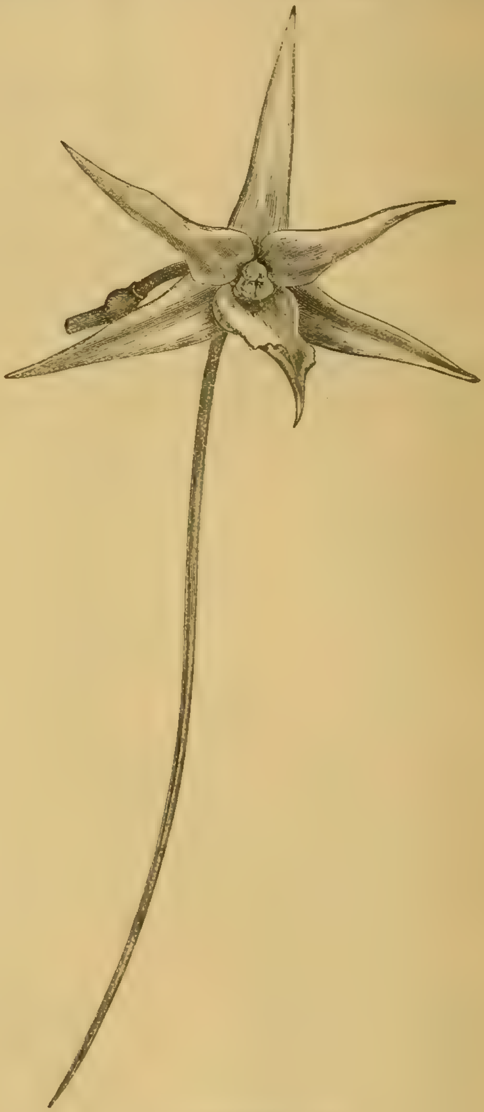


Fig. 354.—Perianth of an Orchid.

The Perianth of Orchids.

The perianth of Orchids presents a most wonderful diversity of singular forms; all belonging, however, to one type almost peculiar to the family. It is almost invariably irregular, and consists of six pieces in two series. The three outer ones are usually uniform in size and shape, and are generally called sepals; and of the three inner parts, the two lateral (petals) are alike, and the other of a very different shape (fig. 354). The latter is called the labellum or lip, and it is this that varies so much in size and shape and colour, being usually of a different colour or differently marked from the others. Oftentimes it is produced below in the form of a spur, which attains a length of 1½ ft. in Angræcum sesquipedale, of which fig. 354 is a reduced representation. It is always adherent to the ovary, and almost always the posterior part becomes anterior through a half twist of the ovary. W. B. Hemsley.

THE FRUIT CROPS.

SCOTLAND.

Floors Castle, Kelso.—Apples are a complete failure hereabouts. Apricots are a partial crop on most trees, Moorpark being the best sort. Plums are plentiful, and we never had so many Green Gages for these last eight years as we have this season. Cherries are a failure, and the Morello crop was never so bad; but I attribute this to a severe north-east blast which smote the trees on May 20, while Apricots and Plums on an opposite aspect were more sheltered. In a case of this kind walls are invaluable. We have very few Pears, and this I attribute to the occurrence of a cold north-west wind at the time of flowering, although they were protected by a 3-ply net. Our Pear wall has the disadvantage of not having a natural protection from a plantation, which is not half established; but in a few years this plantation will give the desired protection. My opinion is that cold winds do more harm than frost, for we can protect from frosts, but we cannot protect from cold winds. Strawberries are an excellent crop. Gooseberries poor. Currants are good, and so are Raspberries.—Henry Knight.

Tynninghame, East Lothian.—Apricots are a fair crop here and throughout the neighbourhood. Apples poor, except some of the earlier sorts; the blossoms wanted stamina. Pears on some trees good, on others only middling. Plums generally a heavy crop. Cherries a full crop. Strawberries, Black and Red Currants, and Raspberries extra heavy throughout the district. Gooseberries in general next to or entirely a failure; in our own case a very heavy crop. The trees generally were damaged some two months ago, but they are now making clean healthy growths, and bid fair to ensure a good promise for next season, provided the weather proves at all propitious. The remarks as to varieties remain the same as in previous years. A new Strawberry, named Moffatt's Duke of Edinburgh, is being largely grown for market purposes. It is a heavy cropper and very large, but deficient in flavour. Mr. Sinclair, of Prestonkirk, grows it largely for market, and it is certainly worthy of a trial in other districts.—R. P. Brotherston.

Culzean Castle, Ayrshire.—Fruit crops hereabouts this season are in general good. Strawberries have been very plentiful, especially Keen's Seedling, which does best in this district. Gooseberry bushes are quite loaded, but in some gardens near here they are scarce. Currants, both Red and Black, are a medium crop, although they promised well when in flower. Raspberries are a good crop, but the fruit is small. Apples are very plentiful, and the same may be said of Pears, especially those on walls. Cherries, Figs, and Plums are also good crops. Our most fruitful Apples here are Lord Suffield, Ecklinville, Royal Russet, Early Margaret, Keswick Codlin, King of the Pippins, Wormald's Pippin, and Cambusnethan Pippin. Pears Williams' Bon Chrétien, Knight's Monarch, Marie Louise, Passe Colmar, and Ne Plus Meuris. Plums Victoria, Kirke's, Jefferson, Coe's Golden Drop, and Rivers' Early Prolific. Our kitchen garden is well sheltered from the north and east winds, and the soil is of a heavy, stiff character, resting on a hard red clay.—D. Murray.

Eglinton Castle, Ayrshire.—Fruit crops hereabouts this season are very variable, a circumstance attributable to last season being exceptionally wet and cold, so that neither wood nor buds were matured; hence, though the blossom was abundant and the spring more favourable than that of the average of seasons, the blooms fell off without setting. There are, however, some exceptions, in which a fair average crop will be secured, arising from the situation being better sheltered and the soil more suitable than ours. Apples will be very scarce—generally speaking, very few, if any. Of Pears the blossom was less abundant than that of Apples, but the crops are heavier. Plums are more abundant than they have been for some years. Cherries are a fair crop. Currants heavy, as far as I have seen and heard. Gooseberries very partial; in some gardens they are a heavy crop, but, on the whole, they are scarce. Raspberries are a fair average crop, and the same may be said of Strawberries. Our garden here lies very low and damp, being only a few feet above the bed of the river Lugton, and also a very few feet above the sea level. The soil is generally heavy, and very unsuitable for good fruit returns. The following are the names of fruits that seem to do best with us, viz., Apples—Lord Suffield, Ecklinville, and Stirling Castle. Pears—Beurré de Capiaumont, Williams' Bon Chrétien, Hessel, Jargonelle (on walls), and Marie Louise. Strawberries—President, Garibaldi, Keen's Seedling, and Elton.—J. Gray.

Bothwell Castle, Lanark.—I may state generally that Strawberries, Raspberries, and Cherries, more especially Morellos, are fully average crops; other sorts of fruit are rather below the average; that is the case here, and I understand that it applies to the Clyde orchards generally. Gooseberries are grown more largely than other sorts of fruit in this locality for the Glasgow markets, and the annual public sale which took place recently realised much less than in average seasons. The soil in the parish of Bothwell is very variable, but a stiff soil with a clayey sub-soil predominates.—Andrew Turnbull.

Munches, Dalbeattie.—Small fruits are generally a good crop, except Gooseberries, which are decidedly defective. Apples, Pears, and Plums are in most places a short crop, although not quite so bad as last year. We have had a variable spring, but no frost to do any injury, from which inert blossoms generally suffer so seriously. I may mention that we never now have the crops of large fruit which we used to have forty or fifty years ago either from standards or from walls. Probably this may to a small extent arise in the case of Pears, at least on the walls, from our trying to introduce too tender or early blooming kinds.—W. H. M.

Dumfriesshire.—A most abundant crop of blossoms on both Apples and Pears disappeared without leaving scarcely any fruit behind. Last year's growth has been very much affected with canker and dying back. No doubt these results have been brought about by the dull wet summer and autumn of last season having left the wood in a very immature condition. Plums in some gardens are a good crop. Gooseberries are about half a crop, and the bushes are not looking well. Raspberries, Currants, and Strawberries are plentiful. There has been less frost here in May than for the last ten years, and, so far, the summer has been a great improvement on that of last year. Potatoes are looking exceedingly well, and, should the autumn be fine, there is the prospect of a fine crop.—D. Thomson.

Blythswood, Renfrewshire.—Fruit prospects, and even the condition of the trees this year in this neighbourhood being so infested with caterpillars, are very discouraging. The trees bloomed well, but did not set. Apricots and Peaches on walls are quite a failure, the wood of neither being at all well set. Plums and Pears are a thin crop. Morellos about an average. Apples poor, but some sorts, such as Brabant Bellefleur, Cox's Pomona, Cellini, Ecklinville, Lord Suffield, and Stirling Castle, have more or less of fruit on them. Gooseberries are rather under the average; in some gardens nearly all had failed; in others there is a good crop. The bushes have been badly infested with black aphis. Black Currants are plentiful and fine, and Red and White ones are also abundant. Strawberries are heavily cropped, especially Garibaldi, Baum's Seedling, and Dr. Hogg. Raspberries also promise to be a good crop. The soil here is stiff and heavy, with no lack of atmospheric moisture.—John Methven.

Dupplin Castle, Perthshire.—The Apple crop in this district is all but a failure. Apricots the same. Plums are a heavy crop; Green Gage and Victoria being particularly fine this season. Pears are not half a crop. Strawberries are a good average crop. Gooseberries and Raspberries are an average crop. Owing to the cold, wet summer last year trees on walls did not ripen their wood sufficiently, consequently any blossom that was on them did not set.—John Browning.

Ardross Castle, Ross-shire.—Our fruit prospects this season are not good. Pears, Apples, Plums, and Peaches are all deficient; the cold, wet, and sunless autumn of last year did not ripen the wood sufficiently. Peaches in orchard houses here (which are unheated) had the leaves hanging quite green at Christmas. Gooseberries and Currants are a moderate crop. Strawberries and Raspberries look promising. Our soil is a heavy loam resting on a cold, damp bottom. Only hardy and early sorts of fruits succeed here, even in favourable seasons.—Robert Massie.

Gordon Castle, Fochabers.—Peaches and Apricots are a light crop, early set fruit and expanded blossom being killed by frost, accompanied by a high wind in the last week of March. Pears are generally a light crop on walls; those on espaliers and standards are better. Apples are generally light; though they blossomed abundantly, they set badly. Plums are a good crop both on walls and standards. Cherries good. Strawberries are a light crop here, but they are good in the neighbourhood. Raspberries, Currants, and Gooseberries are all abundant.—J. WEBSTER.

Glamis Castle, Forfarshire.—Most of the hardy fruit crops are under average in this quarter. Standard Apples are almost a total failure, and Pears are the same, except on walls in favourable situations. The following Plums on walls are a fair average crop, viz., Coe's Golden Drop, Green Gage, Goliath, Jefferson, Orleans, Prince of Wales, and Victoria. Peaches in the open air are almost a blank, and Apricots are not half a crop. Strawberries are plentiful and of fine quality; our favourites are Eclipse, Vicomtesse Héricart de Thury, Sir Joseph Paxton, Keen's Seedling, Duke of Edinburgh, and Elton Pine, all of which are very fine here. Cherries, with the exception of Morellos, are under average. Raspberries are an average crop. Gooseberries half a crop, and Currants are much the same. Most blossoms looked weakly in the spring, a circumstance owing to the cold and wet summer of 1877. This season is, however, very different, and if it continues we may look out for better results next season.—GEO. JOHNSTON.

Cawdor Castle, Nairn.—Small fruits, such as Gooseberries, Raspberries, Currants, and Strawberries, are abundant. Apples very unequal; Lord Suffield, Stirling Castle, and others need thinning, while on some there are none; others are carrying half a crop. Our soil is light, mostly on a gravelly sub-soil. Pears are a scanty crop generally; an old Jargonelle here is bearing a good crop and early; on others on walls there are none. Of Plums we have a sprinkling, but in a garden in the neighbourhood they are in clusters. Cherries mostly dropped when stoning. Apricots are an average crop; I protected with canvas, but a neighbour who used no protection has crops as good as mine. Of Peaches we have none; the old leaves were on them when we pruned in April. This season is in striking contrast to that of last year, fruits being a month in advance of last season. Gooseberries look large. Our best Strawberries are Garibaldi, President, and Elton Pine. Plums—Victoria, Jefferson, and Early Orleans.—JAMES MAITLAND.

WALES.

Margam Park, Glamorganshire.—Excepting Strawberries, Raspberries, Currants, Gooseberries, and Plums, none of our fruit crops are heavy this season, but there is a very fair sprinkling of fruit on many of the Apple, Pear, Cherry, Peach, Nectarine, and Apricot trees, and no kind of crop is an entire failure. Keswick Codlin, Lord Suffield, and Hawthornden are three of our best kitchen Apples. Of these the first never misses a good crop, and this is its general character in Wales. King of the Pippins, Blenheim Orange, and Golden Pippin are amongst our best dessert sorts. The Victoria Plum is bearing heavily, as it always does, and Kirke's, Jefferson's, and Coe's Golden Drop are not far behind it. Moorpark Apricot is the only one that can be relied on in this neighbourhood; it only fruits, however, in certain seasons; but this is not a first-class Apricot district. Royal George, Noblesse, Late Admirable, and Salway Peaches are bearing fairly well on a south wall, and these and the Elruge and Victoria Nectarines succeed much better than Apricots. May Duke Cherries have been moderately plentiful, and on some trees Morellos are abundant. Medlars are a fair crop, and Raspberries and Gooseberries are very plentiful. Currants—Red, Black, and White—are abundant. Keen's Seedling and Black Prince Strawberries are the two which succeed best here, and they have produced an excellent crop; on Sir Charles Napier and President we have hardly any. We do not protect any fruit trees much in spring; they are well sheltered, by means of plantations, from the north and west, but the east winds frequently do much injury both to the bloom, tender fruit, and foliage.—J. MUIR.

Downton Castle, Ludlow.—Fruit crops hereabouts vary a great deal. In my own case Apples will not be half a crop; those that have set best are Codlins and Devonshire Reds. In other localities they are a total failure, with the exception of cider Apples, which, generally speaking, bloom late. Currants are a fair crop. Gooseberries middling; generally speaking, the Warringtons and Rough Reds are carrying the heaviest crops. Sweet Cherries are poor, but Morellos are a fair crop. Apricots a middling crop. Peaches and Nectarines fair; the latter were protected with frigidomo and Fir branches, and so were Apricots, but the trees have not altogether escaped without blistered leaves, which so badly affected them last year. Plums here are a fair crop, and in other parts they are a heavy crop. Damsons the same. Walnuts are very thin, and so are Filberts. Raspberries are a fair crop. Strawberries plentiful and good, especially President, Keen's Seedling, and Sir Charles Napier. Figs not grown. The soil here is generally stiff clay resting on a shaly rock. Trees appear to live a long time in such soil, but do not improve with age. Pears are a failure; they showed a fair quantity of bloom, but it dropped off. At the time when several of the above were in bloom we had a very deep snowstorm, with from 4° to 10° of frost, which killed quantities of bloom. The best crops of fruit are where the trees are protected from the east and north-east winds, but the rainfall has been excessive this spring. During the whole of May and early part of June we scarcely had a fine day, which partly accounts for the failure of the Apple crop.—N. F. FULLER.

Bodorgan, Anglesea.—Apples here are much below the average. Pears are a light crop; Marie Louise, Beurré Rance, and Beurré Diel promise best. Plums are almost a failure, with the exception of Green Gages, which are a moderate crop. Cherries good, especially Morellos. Peaches, Nectarines, Apricots, and Figs do not succeed in the open air here. Gooseberries and Currants are average crops. Strawberries very good, both in crop and quality. Aphides have been unusually troublesome on Plums and Cherries. Our soil is a moderate loam resting on a substratum of rough, hard, stony clay. The climate is mild, particularly in winter, from 14° to 16° of frost being very unusual. The great drawback to outdoor fruit growing about here is exposure more or less to the prevailing winds blowing from St. George's Channel, often charged with moisture and very saline. All trees in a greater or less degree in a few years become covered with Moss and lose vigour. Of hardy fruits that succeed best with us I may mention Apples for autumn and early use—Early Oslin, Keswick Codlin, Lord Suffield, and Hawthornden; later sorts—Cox's Orange Pippin (the best of all dessert Apples), Ribston Pippin, Dumelow's Seedling, Alfriston, Blenheim Orange, Reinette du Canada, Count of Wick, Golden Noble, Norfolk Beefing, and Dutch Mignonne; these are our most reliable sorts. Of Pears, Louise Bonne of Jersey, Marie Louise, Beurré Diel, Passe Colmar, Crassane, and Glou Morceau do best. Of Plums few succeed, except Green Gages. Cherries do fairly well against walls, especially Morellos. Amongst Strawberries the best are President, Sir Charles Napier, Keen's Seedling, and Dr. Hogg. Viscomtesse Héricart de Thury is very good this year, but has always failed before. I shall discard it, as not being so reliable as the sorts first mentioned. I have tried many sorts, but none do so well as the three first named.—J. ELLAM.

Cardiff Castle.—Of Apples we have not more than half a crop; the fruit is small and the leaves very much browned by the storms which we had in May. Pears are partial in places, and, on the whole, scarce; and of Figs we have none. The trees promised well for a crop, but the slight frost which we had in May killed the young fruit. Stone fruits are scarce, and the leaves are very much injured by green fly. Plums scarce, with the exception of Victoria, which bears well in most seasons. Peaches are a fair crop in some places, but in others there are none. Nectarines partial, and Apricots a half crop. Vines on the castle wall here and at the Vineyard, Castle Coch, promise well for a good crop, notwithstanding the severe storm which occurred on Sunday, May 19, which broke off a great many of the tender fruit-bearing shoots and leaves. The plants are strong and healthy, and although the crop will not be heavy, owing to the damage done by the storm, the bunches will be larger and finer than they were last year. Storms of wind are more to be dreaded in the Vineyard here, as well as in the Vineyards of France, than frosts. Strawberries and Raspberries are heavy crops and the fruit is of good quality. Gooseberries and Red, White, and Black Currants are plentiful here, but scarce in more exposed places in the district.—A. PETTIGREW.

Castle Malgwyn, Boncath, S. Wales.—Fruit crops, as a whole, are not very good this year. Pears are nearly up to the average. Apples much under the average, but there is a pretty good crop on espalier and dwarf-trained trees both here and in the neighbourhood; on orchard trees, however, there are scarcely any, though there was a good show of bloom. Cherries are good. Peaches (outdoor) an average crop. Figs and Plums the same. Apricots do not succeed here, nor in the neighbourhood. Nuts are under the average. Of Gooseberries we have very few. Red, White, and Black Currants are average crops. Strawberries plentiful and large; some we had measured from 5 in. to 6 in. in circumference. The soil here is naturally stiff clay, but in the garden under my care, which is about five acres in extent, it has been removed to about 2 ft. in depth, and replaced, as far as possible, with better soil; still we have, however, the cold wet sub-soil which makes vegetation very late, but we are improving it by means of burnt clay and lime. Vegetables do remarkably well in it, but it requires great care to make fruit trees succeed. The system which I am adopting with these is to open a hole 4 ft. square, bottom it with flagstones or slate, with smaller stones on the top to prevent water from standing about the roots; I then get some good loam and plant the trees in it, root-pruning them afterwards if too vigorous or adding fresh soil if too weak. Unless something of this sort be done it is impossible to get good fruit. Some of the soil in this neighbourhood is very shallow, being situated on the slate rock, and fruit trees generally canker on it.—Hy. Howard.

IRELAND.

Headfort, County Meath.—I have a fair share of Apples and Pears, but they are not, as a rule, good crops. Strawberries are very good; also Black, White, and Red Currants. Gooseberries fairly good. Raspberries very poor with me. I have left Peaches and Nectarines to the last, for with me they are the least. Owing to continual rains last year and a wet, cold, clayey subsoil, the wood did not ripen, so we could not expect fruit, although we are well sheltered from the north and east winds. I also hear bad accounts of the Apple and Pear crops from other gardens. In some there are no Gooseberries. In one garden here Plums are a good crop, but the same cannot be said of anything else.—John Clews.

Birr Castle, Parsonstown.—Apples set an abundant crop hereabouts, but three-parts of them have dropped off, the ground being literally strewed with them; some trees have even cast the whole of their fruit. Cherries are an average crop, but small. Figs are an average, but very late. Plums are pretty good. Pears an average both on trained and orchard trees. Peaches on open walls have set well where they were protected during cold nights whilst they were in blossom, but I fear they will not ripen unless we have a very fine autumn. Strawberries are an abundant crop of fine fruit; the heavy rains which we experienced in spring seem to have suited them admirably. Gooseberries are thinner than usual, but fine. Currants are very good. Raspberries are abundant and good. Nuts are very promising. The soil here is of a heavy, clayey nature, but we are pretty free from frosts.—T. J. Hart.

Powerscourt, Wicklow.—With few exceptions, stone fruits are not so good as usual in this district. The great amount of rain which we had in the spring prevented the fruit from setting. Apples and Pears are also very thinly set. Amongst Apples the old Keswick Codlin and Lord Suffield are bearing well in our light land lying on gravel. Another good bearing sort of Apple is King of the Pippins, on which there is a fair crop. Strawberries and Gooseberries are particularly good, as are also other small fruits.—C. Penford.

SUPPLEMENTARY ENGLISH REPORTS.

West Middlesex.—Living in the midst of market gardens and fruit orchards, I have excellent opportunities both for ascertaining and observing the general character of the crops in the district, and I find that the great main fruit crop—that of Apples—is so light as to be regarded as about one-third of that produced in a good season. When the trees were in bloom all looked rosy enough, but in a week or two it was seen that the fruit germs had fallen wholesale, and that the promise of a good fruit year was greatly reduced. Since then there has been another great thinning during what may be called the seed-setting season, and now the crop shows itself in all its full nakedness. A good sprinkling here is far more than compensated by a miserable crop there, some kinds being fairly good, others bearing none; and others again, say, a third of a crop. An orchard that in a good season has produced 1000 bushels this year will not give more than 300. If the 1000 bushels produced at 5s. per bushel £250, the 300 at the enhanced price of 8s. per bushel gives a total only of £120. Pears are a poor crop; so few indeed are they, that it is rare a tree is seen having enough fruit upon it to render it noticeable. The most favoured market Pears are Williams' and Hazel. As a rule these are the most certain bearers; therefore, when they have a thin crop it is not likely that other kinds are worth looking at. The Plum crop is fairly good, although not so heavy nor the fruit so large as it was three years ago. To get two good Plum crops within that short interval is unusual, as such results rarely follow oftener than once in five years, but we welcome the Plum crop this year as some recompense for the losses incidental to other fruits. It is, however, a very temporary crop, in and gone in a few weeks; and, if not marketed ere ripe, is often irremediably spoiled. Prince of Wales, Victoria, Diamond, and Golden Drop are the most favoured market sorts. Of Cherries, the crop of dessert kinds was only about one-half what it should have been, and the fruit not so fine as could have been desired. Morellos, grown largely here as standards, have about two-thirds of a crop, but these rank among the more regular of fruit producers. Raspberries, now nearly over, have been fairly good, better than Red Currants, of which there has been but a moderate crop, and that thin in the bunch. Black Currants in some gardens are a fine crop, in others a very thin one; thus it is difficult to estimate the general bulk. The selling price, however, shows that there are much fewer than usual. Gooseberries were so thin that nearly all were gathered to sell green, such a good price accruing; whilst Strawberries, the only other large market fruit, have been abundant and generally good.—A. D.

Bearwood, Wokingham.—Fruit crops in this neighbourhood are mostly thin, not at all what was expected early in the season, although they escaped spring frosts. The continuous fall of rain and little sunshine seem to have been equally disastrous. Of Apples we have here next to none. Pears are, however, a fair crop both on walls and standards. Peaches and Nectarines are very good, and that without any protection whatever. Apricots are thin, and our trees have suffered much from last year's wet, being on clayey soil. Plums are an average crop both on walls and standards. Of Cherries we have good crops. Strawberries on our heavy soil have also been good; the sorts which I find best this season are Keen's Seedling, Sir Charles Napier, and British Queen, the last very fine. Bush fruits are good, but of Nuts we have none. I may add that our early Potatoes turned out well; they consisted of Veitch's Ashleaf and Hammersmith Kidneys. In looking over later kinds I find that the disease has made its appearance. Cottage gardens seem to be suffering most from it.—J. Tegg.

Strathfieldsaye, Winchfield.—I am glad to be able to report favourably concerning the fruit crops here, with the exception of Apples and Pears. The former bloomed more sparingly than usual, but still I shall have a good half crop. Pears showed well for bloom, but though the flowers were not open, most of the buds were killed by the severe frosts which occurred between March 22 and April 10. Plums, both on walls and standards, are a heavy crop. Cherries a moderate one. Peaches are a fine crop, but insects have been troublesome ever since the young leaves began to unfold; by taking them in hand at once, however, the trees are now in a healthy condition. Apricots are a very fine crop; I protect both them and Peaches with coverings of stout Flax sheeting. I have repeatedly proved this to be a perfect safeguard against 12° of frost. It, of course, requires to be carefully fitted. It is rather expensive in the first instance, costing with fittings about 1s. 1d. per square yard; but I have some of it that has been in use for thirteen years. Therefore it is cheaper in the end than scrim canvas or, I believe, any other covering. Strawberries are abundant and remarkably fine this season. The same may also be said of Raspberries. Many of the Gooseberry buds dropped, but there is still a fair crop. I have for some years allowed the bushes to be very thick of wood, which I find affords protection from frost.—James Bell.

Hanbury Hall, Droitwich.—Fruit crops here, with the exception of Apples, are very good this season compared with what they were last year. From Strawberries, such as President, British Queen, James Veitch, and Alice Maud, we had excellent first gatherings, but now, in consequence of the drought, they have ceased to bear. Gooseberries are a fair crop. Currants, Red and White, good; Black an excellent crop, the bushes being literally laden with fruit. Peaches are scarce. Apricots where protected with tiffany are a fair crop. Figs thin this season; last year we had an abundant crop of them. Plums on pyramids are a good crop, especially on such sorts as Denyer's Victoria, Orleans, Belgian Purple, and Prince Englebert; on standards Blue Impératrice, White Magnum Bonum, Golden Drop, and Smith's Orleans are all good. Pears on pyramids are very satisfactory, the most prolific being Beurré Duhaume, Doyenné d'Eté, Thompson's, Bergamotte d'Esperen, White Doyenné, Prince Albert, Beurré Giffard, Hacon's Incomparable, Knight's Monarch, and Easter Beurré; on walls the following are good, viz., Autumn Bergamot, Marie Louise, Louise Bonne of Jersey, Williams' Bon Chrétien, and Gansel's Bergamot. Cherries, such as White Hearts on standards, are very good; likewise Morellos on walls. Apples, excepting Keswick Codlin, Blenheim Orange, and Ribstons, are a failure here this season. Filberts and Walnuts are also very thin; last season we had the best crop that had been gathered for years.—T. W. Sanders.

Moreton, Dorchester.—Strawberries, Raspberries, Gooseberries, and Currants are all good crops with us. Apples are a very poor crop; on some espalier trees there is a fair crop, but on standards there are scarcely any, and the trees look badly. Our old tree of Tom Putt is bearing a good crop; this is a good hardy sort, and one which seldom fails. It ought to be more grown than it is, being a thoroughly good kitchen Apple, and one not to be despised for table use, and it keeps good until the end of December. Pears are a poor crop generally; Williams' Bon Chrétien, Louise Bonne of Jersey, Bergamotte d'Esperen, and Beurré de Capiaumont are the best. Plums are very poor indeed; Orleans and Victoria are the best. Morello Cherries are pretty good, but of other sorts we have scarcely any. Figs nearly all dropped. Peaches and Nectarines out-of-doors are very thin, and the trees suffered from cold in spring; but in orchard houses they are a good crop. In one garden in this neighbourhood there is a fair crop of Plums under glass, while out-of-doors in the same garden there are next to none. Another garden furnishes a convincing proof of the need of protection; there a piece of thatch overhangs a small portion of a Winter Nelis Pear tree. Under the thatch the fruit is clean and good, and required thinning, while on the exposed part there are none. The Potato disease appeared earlier than usual in this neighbourhood. We have not much in our garden, but some patches in cottage gardens are much affected, both in haulm and tuber.—D. UPHILL.

Killerton, Exeter.—Peaches, Nectarines, and Apricots are abundant, and the trees are healthy. Of Pears we have a moderate crop on walls, but on pyramids they are scarce. Apples in orchards moderate; they have fallen off very much during the last few weeks. Of Cherries we have very good crops. Plums are scarce. Figs moderate. Gooseberries a heavy crop. Black Currants only moderate; Red and White good crops. Strawberries are very fine and abundant, and of Filberts we have good crops. Potatoes of the earliest sorts both in frames and on borders are much diseased; late sorts very promising.—JOHN GARLAND.

Shrubland Park, Ipswich.—Hereabouts Apricots are a failure. Peaches on walls scarce; under glass plentiful. Pears and Apples are a partial crop and the trees are badly blighted. The sorts of Apples on which there are fair crops and that generally bear best are King of the Pippins, Nonsuch, Cellini, Lord Suffield, Beauty of Kent, and Nonpareil. In a few orchards that are sheltered from the east winds there are average crops. The soil in this neighbourhood is variable, but chalk subsoil prevails. Among Pears, Louise Bonne of Jersey, Williams' Bon Chrétien, Althrop Crassane, and Beurré Rance on walls are the most regular bearers. Plums of all sorts are a light crop outside, but in orchard houses they are abundant. Strawberries are fine in size and quality, but only half a crop. Raspberries are plentiful. Gooseberries are a failure. Black Currants are a full crop and good. Red and White are under the average We have had no rain here for the last three weeks.—THOMAS BLAIR.

Cossey Park, Norwich.—Of Apricots we have but few, and Peaches and Nectarines are a short crop, but the trees are healthy. Plums, both on walls and standards, are scarce, but in some quarters they are abundant. Apples are a good crop, but lately they have fallen so much that most of them are on the ground under the trees. Of Pears we have but few. Gooseberries are a fair crop. Currants are short and bad in quality. Of Strawberries we have an average crop. Walnuts and Filberts are not up to the average. The Potato disease appeared very early, but made little progress, owing to the drought. I never observed it so early as the middle of June before.—J. WIGHTON.

Priory Gardens, Warwick.—Fruit crops in this locality are, with a few exceptions, good. Peaches, Nectarines, and Apricots are scarce, except on trees which were well protected. Plums, consisting of Victoria, Kirke's, Magnum Bonum, Orleans, Green Gage, and Damsons, are a fair average crop. Of Pears on walls and pyramids the following are carrying good crops, viz., Thompson's, Beurré d'Amanlis, Williams' Bon Chrétien, Marie Louise, Napoleon, Beurré Rance, Easter Beurré, Louise Bonne of Jersey, Beurré d'Aremberg, and Jargonelle. Apples are likewise heavy crops; those which are fruiting most freely are Lord Suffield, Cellini, Keswick Codlin, Normanton Wonder, Hawthornden, Newtown, Ribston, Forfar, and Cox's Orange Pippins, King of the Pippins, Blenheim Orange, Fairy, Emperor Alexander, and Early Nonpareil. Of Cherries we have an average crop of White Hearts, May Duke, Bedfordshire Prolific, and Morellos. Amongst bush fruits, Red, White, and Black Currants are heavy crops, and fine in quality Gooseberries are, with a few exceptions, light—not half a crop. Raspberries plentiful and fine, and Strawberries abundant and extra fine in quality, though their season will be short, as the last two weeks of warm, dry, sunny weather have ripened them all at once. Walnuts are about half a crop. Filberts are scarce. Potatoes are turning out very good, and as yet free from disease. Our soil is light and poor, situated as we are on the sandstone rock; therefore a wet season suits us remarkably well.—ROBERT GREENFIELD.

Osmaston Manor, Derbyshire.—Apples, Pears, Apricots, Plums, and Damsons are medium crops. Strawberries and Raspberries good. Gooseberries half a crop. Red, White, and Black Currants good. Peaches, Nectarines, and Figs grown indoors and Cherries half a crop. Filberts and hedge nuts good. The soil here is almost all gravel, and in order to grow fruit well clay should be used with it. The following are the best fruits for this district: Marie Louise, Louise Bonne of Jersey, Williams' Bon Chrétien, Gansel's Bergamot, Comte de Lamy, Beurré de Aremberg, Easter Beurré, Winter Nelis, Glou Morceau, Passe Colmar, and Jargonelle Pears. Court Pendu Plât, Cox's Orange Pippin, Gravenstein, Ribston, Sturmer, and Fearn's Pippins, and others amongst dessert Apples; and amongst kitchen sorts Blenheim Pippin, Cox's Pomona, Hawthornden, both old and new, Keswick Codlin, Manks Codlin, Northern Greening, Dumelow's Seedling, Warner's King, Waltham Abbey, Lord Suffield, Minchall Crab, and others. Our best Cherries are Elton, May Duke, Black Tartarian, Black Eagle, Bigarreau, Napoleon, and others. Plums—Blue Gage, Green Gage, Coe's Golden Drop, Dove Bank, Kirke's, Jefferson's, Victoria, and Washington. Black Currants—Naples. Red Currants—Warner's Grape and Victoria; and Gooseberries—Warrington and Crown Bob.—JOHN BOOTH.

Huntroyde Park, Burnley.—Apples here are a complete failure; the trees were covered with healthy bloom, but it was destroyed by frost, a continuance of cold wet weather, east wind, and low temperature. Pears on walls with southern aspects are a fair crop; on east and west walls very thin. Marie Louise, Glou Morceau, Duchesse d'Aremberg, Beurré Diel, Autumn Bergamot, and Passe Colmar are amongst the best Pears for this neighbourhood. Plums on walls are a heavy crop; Jefferson, Rivers' Early Prolific, Angelina Burdett, Yellow Impératrice, and Victoria are some of the heaviest croppers with us, especially the last-named variety. Cherries are a fair crop on walls. Morellos, however, are light, both on walls and standards. Strawberries are not so heavy this year as we usually have them, and the fruit is smaller, owing to the hot dry weather which occurred while they were swelling. Gooseberries are a fair crop. Black Currants heavy. Red not so good. No Peaches or Apricots are grown hereabouts outside. We consider the season a fortnight earlier than we have known it to be for the last ten years. Our gardens are on the blue clay, very tenacious, and lying upon the coal measures in a valley running east and west. In the spring we have cutting east winds from March until the middle of June, and we occasionally suffer from south-west winds, especially late in summer. A dry season suits us best. Potatoes are turning up clean and good in quality.—H. L.

Latimers, Bucks.—Apples here are under the average, but on King of the Pippins there is a heavy crop. Our best sorts are Cellini, Cox's Orange Pippin, King of the Pippins, Lord Suffield, Blenheim Orange, Golden Noble, and Court of Wick. Plums are an average crop; the most prolific are Jefferson's, Victoria, Golden Drop, and Prince of Wales. Pears are a light crop, and so are Nuts. Cherries an average crop, but smaller than usual. Of Peaches and Nectarines we have very few. Strawberries are plentiful; the best sorts here are President, Vicomtesse Héricart de Thury, Sir Joseph Paxton, Lucas, Oxonian, and Eleanor; also the old Hautbois. All sorts of Currants are plentiful, and so are Raspberries. Our soil principally consists of stiff clay; in some parts chalk. Potato disease hereabouts is very bad; the worst affected are the Early Rose and other American varieties.—A. DONALDSON.

MELONS AT CARDIFF CASTLE.

ON my way back from Bristol the other day I took the opportunity of making a hurried visit to Cardiff Castle, expressly to see the Melons growing there. I had heard much about the way in which they were managed, and I now wish to state that, although I have seen Melons grown in many ways and in many places, I never saw them cultivated so well as at Cardiff Castle. One side of a large span-roofed house is filled with them. The bed in which they are planted is about 4 ft. wide, and heated underneath with hot-water pipes; the plants stand about 6 ft. apart, and the material in which they are growing is a mixture of loam and manure. From the surface of the soil to the first wire of the trellis is about 4 ft., and each plant has a clean stem of that length as thick as a stout walking-stick. The leading shoot reaches the top of the trellis, which is a distance of some 6 ft., and from this the side shoots are trained horizontally. Not one of them encroaches on its neighbour; on the contrary, every one of them has its own place, like the shoots of a carefully-trained Peach tree, and not one of the leaves, which are very large, overlaps or shades one another. Five, six, and seven fruits were hanging on each plant, but their numbers were nothing to their size, plumpness, shape, and netting. Reid's Hybrid is a kind largely grown here, and, though by no means a large Melon, one of this variety which I saw weighed 5 lb., and it was not the largest; therefore 7 lb. would not be too much to guess them at. The 5 lb. one was quite ripe. The plant from which it was cut was growing in soil quite wet, yet there was no indication of splitting or deterioration in flavour, and every leaf was as fresh and green as when the plants were six weeks old. The Melons in frames were in all respects equally good; some plants put in for late crops looked most promising, although they were planted in the same soil in which early crops had been produced.

CAMBRIAN.

ANSWERS TO CORRESPONDENTS.

Increasing Rhododendrons.—I possess a very fine species of Rhododendron, and I wish to obtain several plants of it by slips or otherwise. What are the best means of increasing it?—F. B. [The best way is to graft it upon the common R. ponticum. Cuttings taken off and inserted firmly in pots singly and kept close in a frame or under a handglass will also soon emit roots.—H. H.]

Ferns.—I wish to show Ferns at our forthcoming exhibition. The schedule says, "Six exotic Ferns, in pots, different species." Now I want to know if I may show more than one Adiantum, or Pteris, as the case may be, without being disqualified?—J. R. [As many genera as possible would doubtless be desirable, but obviously you may show more than one species in each genus and not be liable to be disqualified.—M.]

Jerusalem Artichokes.—Should these be thinned out now?—J. M. [They should have been thinned out when the plants were young; but if very thick you might even now cut out some of the stems.]

Vine Leaves.—*W. H. M.*—They are attacked by red spider, which you may see by putting them under a magnifier. Your only remedy is to keep the roots well supplied with water and the house moist, and if the Grapes be not colouring syringe the leaves, avoiding wetting the berries as much as possible. Painting the hot-water pipes or flues with thick guano water when the house is closed at night imparts vigour to the leaves and kills many insects.—S.

Names of Plants.—*Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible,* i.e., *both stem, leaves, and flowers, and fruit, when possible. We cannot attempt to name plants from single leaves. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as Fuchsias or Pansies, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.*——*H. F.*—Astrantia major. *J. H. F.*—1. Blechnum occidentale. 2. Gymnogramma Martensi. 3. Doodia lunulata. 4. Adiantum pubescens. *P. M.*—Withered up; but looks like a double variety of Geranium sylvaticum. *C. M. A.*—Eucomis, probably punctata, grown in shade. *C. W.*—1. Caladium Meybeer. 2. Beethoven. 3. Decandolle. *C. R.*—Your Aroid is Sauromatum guttatum, an East Indian plant. *H. M. R.*—The little rock plant is Mentha Requieni, a native of Corsica. *F. F.*—A promising Rose of the purple-shaded bright-crimson class; not large, but very double. *C. M. O.*—1 and 2. Gentiana gelida. 3. Probably Sempervivum ciliatum; but if leaves had also been sent it could have been named with certainty.

Begonias Shedding their Flowers.—Many Begonias have a vicious habit of shedding their male flowers unexpanded. I observe this to occur in plants of different species in different greenhouses, and in some plants out of a number potted and treated alike. Can any of your correspondents assign a reason and suggest a remedy for a habit which detracts so seriously from the successful cultivation of this beautiful family of plants?—P. [Begonias shed their male flowers when not sufficiently watered, or when their roots are destroyed by too much moisture. Some varieties, however, always drop their male blossoms, and such sorts should be thrown away; others drop their male blooms when planted out-of-doors, but retain them when cultivated under glass.—L.]

Roses in Bouquets.—"Constant Reader" inquires (see p. 48) if a judge would be justified in disqualifying a bouquet containing one or more Roses which was competing for "the best bouquet of greenhouse flowers." I should understand a schedule so worded to mean that stove and hardy flowers are not to be used. If the competition took place at a season of the year when any flowers in the bouquet are in bloom out-of-doors, that bouquet ought to be disqualified, even if the exhibitor were able to prove that he gathered every flower from within a greenhouse. If a bouquet of hardy flowers were shown at a period of the year when none of the flowers could be gathered out-of-doors, I should regard that as a bouquet of greenhouse flowers. The white Japan Spiræa must be regarded as a stove plant when in bloom at Christmas, a greenhouse plant in the spring, and a hardy plant in summer.—W. T. T.

Yellow Carnations and Insects.—Is there any cure for Carnations attacked by insects like the enclosed samples? I have a number of Carnation plants in my garden, but none are attacked as the beautiful yellow one is. I cannot make out if the mischief is done by earwigs or small snails. The bud, when large, is sometimes completely eaten out; at other times cut across, and the stem completely bared. Is there any remedy?—C. F. C. [It is not earwigs that have eaten the stalks of your Carnations; they, however, eat the lower parts of the petals. I have taken hold of flowers that did not seem much damaged, and have found nearly all the petals eaten clean through at the base. They can be best destroyed by picking them off with the aid of a lamp at night. Nor do I think that slugs are the depredators, as they mostly look for a softer substance on which to feed; if it is, you will find them at work at dusk. In all such cases look for the culprit at night; you will find him feeding between 8 and 10 p.m.—J. D.]

Roses for Exhibition.—What is the quickest and best method of growing pot Roses for exhibition? and I shall also be grateful for any hints you may give me as to pruning and shaping them. My plants are young and vigorous.—J. M. [There is no quick road to making specimen Roses. Your young, vigorous plants should be kept growing healthily and steadily under glass during the next month, air being freely admitted and the plants syringed and shut up early in the evening. Then have them placed on slates to exclude the worms out in an airy, sunny position, and let them be taken under shelter before the winter rains set in, say by October 1. Water them occasionally during winter.—Geo. Paul.]

Anemones from Seed.—I will be much obliged for full directions as to the culture of Anemones. When to sow the seed? if in open ground, or in pans to transplant? what aspect? to be kept moist or dry? what soil? whether best left from year to year, or taken up and re-planted? in short, all information possible.—G. [Taking Anemones as they are understood in the seed shops, viz., the varieties of coronaria, of fulgens, and of hortensis or stellata, they are most successfully cultivated from roots. Of the forms of coronaria, double and single, they range from pure white through all the shades of lilac and purple to the richest glowing magenta; of fulgens, from the colour of a soldier's coat to bright crimson, including the double Peacock Anemone of the south of France, and stellata with its beautiful starry flowers. These all prefer a loamy, well-drained soil with partial shade, and if planted in succession will yield flowers for at least six months of the year. We have had a bed of coronaria varieties in bloom throughout June, and but for the hot sunshine and the absence of shade they would have continued a good way throughout July on soil moderately drained and somewhat inclined in summer to be harsh. These roots were planted in April. Plants of fulgens were in bloom from Christmas, along with the various single forms of coronaria. If you must have seed, it should be sown in March or April on a bed of well-prepared soil, moderately moist and in partial shade, and the seedlings should not be transplanted until the second year. On soil where these Anemones succeed, and where slugs do not prey upon them, they will flower earlier and continue longer in bloom if they are left undisturbed; on wet soils they are better lifted and re-planted late in autumn, and in such soils the roots are better surrounded by sand.—P. Barr.]

DYE PLANTS.

With reference to the article on "Dye Plants" (see p. 29), I may perhaps be allowed to point out that the Lo-Kao or green dye of the Chinese is obtained from the barks of Rhamnus utilis and R. chlorophorus. Its use in France was chiefly in the silk-producing districts for dyeing silk, but what is said with regard to its now being rejected, in consequence of the more general use of the coal-tar dyes, applies equally at the present time to nearly all the vegetable dyes. Rhamnus Frangula is described as yielding "Persian or Turkish yellow berries." R. Frangula is, however, the Alder Buckthorn, from the unripe fruits of which a green dye has been obtained; but the chief value of this plant lies in its wood, which is used almost exclusively for making charcoal in the preparation of the best rifle gunpowder, and is known to gunpowder makers as dog-wood. The little round fruits, known in commerce as Persian berries, yellow berries, French berries, or graines d'Avignon, are generally attributed to Rhamnus infectorius, but are probably furnished not alone by this species, but also by R. amygdalinus, and perhaps other species. R. catharticus (the Purging Buckthorn), which, like R. Frangula, is an indigenous British species, produces a green colouring matter from its fresh fruits, which, when properly prepared, constitutes the pigment known as sap green. The colouring matter from Hibiscus rosa sinensis is, unlike most other dyes, obtained from the flowers; these are either yellow, white, dark purple, red, or variegated. Upon bruising the petals they turn either black or purple, the black being so intense as to be used for blacking boots; hence the plant is sometimes called the Shoeblack Plant. Besides the Woad (Isatis tinctoria), I. indigotica is grown largely in the north of China for the sake of the dark blue dye afforded by it. John R. Jackson.

Museum, Kew.

Old Roses.—I notice that among the old Roses shown at the Crystal Palace was the old Yellow Provence. Perhaps some of the readers of The Garden who succeed in growing this remarkably beautiful old Rose well will be so good as to describe their mode of culture or treatment in The Garden. I possessed it twice, but could do no good with it on either occasion—only keeping it alive a few years, and cutting a few flowers of indifferent quality. I have only seen it good once, and that was in Devonshire. Has any one succeeded with it on the Manetti or the Brier?—D. T. Fish.

DROUGHT IN THE EASTERN COUNTIES.

This has now become serious. We have had no rain since about June 20, and this long continuance of drought includes a week or more of real tropical weather from that date, when the thermometer reached 90° in the shade as its maximum and remained for nearly a week hovering between 75° and 85°. This intense heat coming on the back of a long period of dull weather tried vegetation to the uttermost. A few showers would have proved invaluable, but none have fallen. The indications of rain up to and about St. Swithin's were most tantalising, and since the 15th the weather seems to have cleared off for a new and more intense spell of drought. Vegetables flag, languish, and run to seed with provoking despatch, and the Apples continue to drop until it almost seems as if few would be left on those trees that did set a fair crop. Peaches and Plums seem rather to enjoy the drought. Roses on strong soils droop and flag, and the ground cracks into huge fissures. Potatoes are ripening fast. The early ones had better be lifted before the rains come, or the chances are they will be ruined by the disease. The later Potatoes, unable to swell, have sent out feelers in the form of long white runners from the small tubers to see if moisture is within reach to enable them to form a secondary crop. The first crop is thus being ruined, and the second, if any, is not likely to prove of much account. No doubt the unusual heat has a good deal to do with this provoking development; perhaps as much, or more, than the drought. Potatoes do not bear tropical temperatures well. The heat and the drought have been all that could be desired for the hay, Corn, and Mangold crops. The first is now safely stacked; the Wheat and Barley are rapidly setting, and on warm soils also changing colour, and harvest, should this weather last, will be general by the end of July; this is much earlier than was anticipated. The Mangold luxuriates in the heat and the drought, in this respect presenting a striking contrast to Swedes, Cabbages, and Turnips, which are assuming a blue tint, as are Broccoli, Cauliflowers, &c. The greatest want of these eastern counties is more water in the gardens. Our waterings, to say the least of them, are a mere mockery. We want, as the farmer expressed it about his Turnips, to have a river over our fruit and kitchen gardens for twenty-four hours. I once saw this done on a Vine border at Belvoir. I believe that it is in the more liberal use of water that the French growers are enabled to beat us in the growth of summer salading. Labour must be cheap in France, judging by the amount of it expended in the cultivation of vegetables and salads, and the really moderate prices of the same in the Parisian shops and markets after being taxed with the duty at the barriers. D. T. Fish.

Conifers at the Preston Show.—Amongst outside exhibits at this show none was more interesting than the collection of Conifers from the Borrowash Nurseries. They consisted of large and healthy specimens of the short-leaved Japanese Yew (Taxus adpressa), the Huon Pine (Dacrydium Franklini), one of the most irregular-habited of Conifers, and one suitable for rockwork or elevated positions; and a distinct new hardy Conifer named Retinospora tetragona aurea, a variety having a free, upright growth and of a soft golden colour. With these also came a gigantic plant of the golden Dovaston Yew (Taxus Dovastoni variegata), a kind with a gracefully drooping habit, and one of the best of the Yews as far as single specimens on lawns are concerned; the true Japanese Hemlock Spruce (Abies Sieboldiana) furnished with drooping masses of deep green leafage; and the drooping, column-shaped Podocarpus alpina.—S.

Japanese Plants at the International Exhibition.—Some time since in speaking in the "Revue Horticole" of the interesting groups of plants exhibited by the Japanese at the Universal Exhibition, and on the special subject of Pæonies, M. Carrière remarked that the herbaceous varieties would not flower, which was much to be regretted, but that the shrubby Pæonies promised to bloom abundantly. In the number of the "Revue Horticole" for July 1, M. Carrière informs us that at the end of May a large number were in full bloom, the flowers being remarkable for the beauty and, in many cases, for the novelty of their colours. None of the varieties show very large or full flowers, but this is easily accounted for by their having to be re-potted on their arrival in Paris, an operation which would be quite sufficient to diminish the size of the flowers, and above all to lessen the number of their petals. M. Carrière does not give us the names of the most interesting varieties in consequence of their being ticketed in Japanese.—C. W. Quin.

Carpet Bedding with Hardy Plants.—A carpet bed near the entrance to Messrs. Veitchs' Coombe Wood Nursery is well worth notice, showing, as it does, what excellent effects may be obtained by the use of dwarf-growing hardy shrubs in what is called pattern gardening. The plants employed in this case are silver and golden-leaved Retinosporas, Euonymus albo-variegatus, and Mahonias, the whole being edged with a band of Erica herbacea carnea. Such beds give little or no trouble when once planted; they are equally beautiful in winter and in summer, and, although it might not be advisable to carry this style of gardening to an unlimited extent, yet a few such beds introduced into flower gardens where a series of pattern beds exist would go far to relieve the monotonous blaze of colour usually found in such places, and thereby greatly enhance the general effect.—S.

What is a Crop of Peaches?—A Peach tree at Sunbury Park is said (see p. 50) to cover 22 ft. by 22 ft. The estimated crop is 322 dozen fruits, or eight to the square foot. It would be interesting to know if that is a fair average of what the tree in question annually produces, or whether it is exceptionally heavy. One of the greatest mistakes to which we cultivators are liable is not thinning Peaches or other fruits sufficiently during their early stages of growth. Every one conversant with Peach culture is aware that a moderate crop of good fruit is of far more value, both commercially and for dessert purposes, than an unlimited number of inferior fruit; even at the lowest computation the crop at Sunbury Park on one tree would weigh considerably over ¾ of a ton. That the best examples of culture in every branch of horticulture should receive due recognition is only right, but too glowing reports often make inexperienced people dissatisfied with the results which they obtain. I must confess that a crop of Peaches averaging eight fruits to the square foot for every foot of trellis covered is a feat the like of which I never expect to see realised.—James Groom.

—— I notice "J. F.'s" remarks (see p. 50) about the Peach tree at Sunbury Park. Several years personal acquaintance enables me not only fully to confirm all that he says, but to add that the Peach and Nectarine trees there have borne equally heavy crops for several successive years; so much so that many of his neighbours have remarked to Mr. Cowburn (the gardener) that he would ruin the trees by overloading them. He, however, appeared to be of a different opinion, which has certainly proved a correct one. The fruit is not only quite as numerous as stated by "J. F.," but is large and even in size and of first-rate quality. The same remarks may apply to the Vines, which never fail to produce an abundant supply of fine Grapes. Such successive crops can only be the result of good cultivation.—Robert Osborn, *Fulham.*

"Brief."—Messrs. Wyman have issued the first volume of this well-edited and well-arranged weekly journal, which is likely to be useful for reference. Attention is invited to the index, which presents the following features: 1. The headings of the articles have been re-cast, in order that the references may precisely indicate the nature of the matter to which reference is made. 2. The references to occurrences under each heading are in chronological order, thus indicating the progress of any given event, as well as the current opinion regarding it. 3. To most of the principal events of the period the date of occurrence is appended; thus an index to the files of all the daily and weekly press is presented. 4. Much care has been taken in compiling the obituary, as well as the list of wills and bequests, which are alphabetically arranged. It is bound in a very neat and simple cover.

Othonna crassifolia for Baskets.—This pretty Mesembryanthemum-like plant where curved with its bright yellow flowers, is very valuable for baskets or similar purposes. It was lately shown by Mr. Boller, of South Kensington, who had a rustic flower stand ornamented with it, in order to show its value for basket adornment.—S.

The Potato Crops in Ireland.—With us the Potato crops look very promising; the haulm is very green, and as yet there are no signs of disease, though after the very heavy thunderstorms which we had on the 26th and 27th of June, I fully expected to see some. One thing in our favour is, it is very cold for the time of year. Yesterday, July 8, was a summer's day, but to-day it is cold again, and the barometer is falling. Very few early Potatoes are grown here, and what are grown are Flounders, there being very few Ashleafs. Of late Potatoes, we have seldom any before November, and I have seen them later.—John Clews.

The Queen, accompanied by Princess Beatrice, honoured the Royal Nursery at Slough with a visit the other evening. In one of the houses was arranged for her inspection a large collection of cut Roses, which were much admired, Her Majesty personally selecting some, which she took away with her. The Royal visitors were much struck with the Carnations—especially a houseful of yellow ones, seedlings from Prince of Orange—and also with the Picotees and specimen Roses.

Foremost amongst the decorations at Charing Cross on the occasion of Lord Beaconsfield's return from Berlin were the plant ornamentations provided by Mr. Wills. These consisted of over 10,000 plants, many of them 20 ft. high and amongst the cut flowers were some 3000 Roses.

No. 349.] SATURDAY, JULY 27, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

A FINE KENTUCKY COFFEE TREE.

(GYMNOCLADUS CANADENSIS.)

I SEND you a photographic illustration of a tree of this that grows on an estate in this neighbourhood. It is a tree which is not so much planted as it should be, even here, and one which I do not remember to have seen used as an ornamental tree in England. The specimen in question was planted in 1825, and its present height (1878) is 87½ ft.; the circumference of the branches is 180 ft., and that of the stem at 4 ft. from the ground, 10 ft. This species of tree is found in the western part of the State of New York, as far north as Montreal, in Canada, but its greatest perfection is in the fertile bottoms of Kentucky and Tennessee. About 60 ft. is the usual height of the Coffee tree in these soils, but the growth of the tree, a photograph of which I send, exceeds this by over 20 ft. When in full foliage (which this specimen was not when taken) it is a very beautiful tree. The leaf, doubly compounded and composed of a great number of bluish-green leaflets, is generally 3 ft. long and of two-thirds that width on thrifty trees. The whole foliage hangs in a well-rounded mass that would look almost too heavy were it not lightened in effect by the loose tufted appearance of each individual leaf. The flowers, which are white, are borne in loose spikes in the beginning of summer, and are succeeded by ample brown pods, flat and somewhat curved, which contain six or seven large grey seeds imbedded in a sweet pulpy substance. As the genus is diœcious it is necessary that both sexes of this tree should be growing near each other to produce seeds. When Kentucky was first settled by adventurous pioneers from the Atlantic States, who commenced their career almost without the necessaries of life, except what was produced by the fertile soil, they fancied they had discovered a substitute for Coffee in the seeds of this tree, and accordingly the name of Coffee tree was bestowed upon it. But when a communication was established with the seaports they gladly relinquished their Kentucky beverage for the more grateful flavour of the Indian plant, and no use is at present made of it in that manner. It has, however, a fine compact wood, very useful in building and cabinet work. The Kentucky Coffee tree is well entitled to a place in every garden. In summer its charming foliage and agreeable flowers render it highly beautiful as a lawn tree, and in winter it is certainly one of the most novel trees in appearance in our whole native sylva. Like the Ailantus, it is entirely destitute of small spray, but it also adds to this the additional singularity of thick, blunt, terminal branches without any perceptible buds. Altogether, it more resembles a dry, dead, and withered combination of sticks than a living and thrifty tree. This would be monotonous were it the common appearance of our deciduous trees in winter, but it is not so; on the contrary, it is a rare and unique exception, and it is highly interesting to place such a tree in the neighbourhood of other full-sprayed species. The seeds vegetate freely, and the tree is usually propagated in that manner. It prefers a rich, strong soil, like most trees from the Western States. There are some very fine specimens of it on the lawn at Hyde Park, on the Hudson, the seat of Mr. Walter Langdon, about twenty miles above here, which have fruited during a number of years.

HENRY WINTHROP SARGENT.

Wodenethe, Fishkill-on-Hudson, New York.

[The photograph, for which we are indebted to Mr. Sargent, shows a very fine tree, reminding one somewhat of an old Planera in the upward tendency of its main branches. Little of the character of the tree, however, can be seen in a small photograph. We should like to see it done by Vernon Heath, and then it might be possible to make a fine engraving of it. We have also to thank Mr. Sargent for a series of views in his garden on the Hudson—a fair and well-stored garden in a lovely country, and of which all who have visited it will have pleasant recollections.—ED.]

TREES WITH COLOURED LEAVES.

ACERS.—Several very favourable allusions have been lately made to Acer platanoides Schwedleri in the various horticultural papers, wherein, as I think, its merits as a new coloured tree are overestimated. Its peculiar characteristic, viz., its colour, should be as constant as possible; whereas, in this case, the bronzy hue of its new leaves lasts only for a very short time. It usually makes its growth in the spring very rapidly. When the leaves first unfold their colour is deepest and brightest, but this quickly passes away, and they gradually acquire a dusky, unpleasant brown hue, and finally a dirty green, and, besides, the leaves are rarely perfect, often having broken edges, a peculiarity for which I can scarcely account. I think we are often much too prone to neglect old friends for new ones. Now I wish to direct attention to an Acer that I consider much superior to Schwedleri, viz., colchicum rubrum. The colour of the new leaves of this is much deeper than that of Schwedleri; young leaves are always being formed which afterwards gradually change to bright green, and they have a distinct shape of their own with clearly-cut outlines. The tree is a very fast grower. Another good and desirable Acer is the Sugar Maple (A. saccharinum). It is a tree of moderate growth, but its growing points are of various shades of rose and crimson, and the leaves are elegantly cut and very pretty. A. virginianum is also a free-growing tree with very elegant foliage; the young leaves appear as though coated with powdered bronze. A. spicatum is a species of moderate growth, whose distinct foliage in a young state is creamy-white. I must not by any means leave out the really fine A. Leopoldi, whose young foliage presents such beautiful combinations of rose, crimson, white, and green, and afterwards becomes beautifully white and green. It is very remarkable that, notwithstanding the great wealth of good pictorial trees now to be had, but few are often seen; taking the Acers as a case in point, the common Sycamore is the one most frequently met with.

QUERCUS PALUSTRIS.—I should not omit to mention as a coloured tree this Oak, whose young foliage possesses such beautiful shades of orange and red, and this quite apart from the very rich tints assumed by it in the autumn.

PTELIA TRIFOLIATA VARIEGATA.—This is one of the handsomest of golden variegated trees, and its variegation is much more enduring than that of the Golden Oak, which speedily burns in the sun. It is also much brighter than the Golden Elder; in fact, in the distance it appears to be covered with rich golden flowers. Nevertheless, it is a tree which is seldom seen. Why is this? for it is not new. [We fancy the variegated form is rare. The specimens sent by Mr. Smith fully bear out what he says of it. It will probably prove more attractive than the green normal form to many people.]

WEIGELA LOOYMANSI AUREA.—This pretty dwarf shrub ought to become common. It grows freely, and has a rich golden colour peculiar to itself. The yellow is laid on with such an unsparing hand, as to leave nothing to be desired in that respect.

Newry. T. SMITH.

The Golden-leaved Chestnut (Castanea chrysophylla).—Of all the fine trees and shrubs that have yet been introduced from the New World this is perhaps the handsomest, and the fact that it has withstood with impunity our English climate much enhances its value. There is a specimen of it against one of the walls at Kew, which, although small, is now in fruit. The leaves are dark green above, and covered with a golden-yellow powder beneath; thus the contrast between the upper and lower surfaces produces an effect rarely seen in this class of plants, rendering this Chestnut most useful as a decorative shrub. It inhabits California and Oregon, where it grows in great abundance, and usually forms low shrubs, flowering and fruiting freely when not more than 3 ft. high. In the Cascade Mountains of Oregon, however, it attains a height of from 30 ft. to 60 ft., forming a large spreading forest tree. Doubtless it is quite hardy in the more favoured parts of this country and elsewhere if under the protection of a wall, in which case it should have an eastern or western aspect, as much exposure to direct sunlight produces an injurious effect upon it. It is procurable in most nurseries in which trees and shrubs are made a speciality, but it is far from being commonly cultivated, which it certainly deserves.—W.

NOTES OF THE WEEK.

Eulalia japonica.—For shrubbery planting, or for pot culture for the conservatory, few variegated Grasses equal this. It is perfectly hardy, grows about 5 ft. or 6 ft. high, and its leaves, which are gracefully arching, are beautifully striped with green and white and tinted with rose. We lately saw some fine specimens of it in Messrs. Veitch's Coombe Wood Nursery, where, associated with choice Conifers, it had a charming effect. For isolated positions on lawns it is an excellent plant, or it might be used in the wild garden with advantage.

Strawberries in Middlesex.—In some recent statements about Strawberry culture for the London market which have been going the round of the press no mention of their culture in Middlesex is made. It will be apparent that this is an important omission when we state that more good Strawberries are sent to the London market by growers in Middlesex than from all the other home counties together.

The Greater Bindweed (Convolvulus sepium).—This, although generally a great pest in gardens, may nevertheless be rendered a most useful and beautiful auxiliary in spots where it would not stand a chance of becoming a nuisance. In a cottager's garden near Kew an arbour, roughly constructed of sticks, is partially covered with the bines of the Hop, and these again are almost hidden by the large, snow-white, trumpet-shaped flowers of this Bindweed, the whole forming a picture of surpassing loveliness, and putting altogether into the shade many much more ambitious attempts in that direction.—G.

The Coral-bearing Barberry (Berberidopsis corallina).—Whether in a greenhouse or against an outside wall this charming climbing shrub forms at this season a very striking object. The blossoms present the appearance of being carved in coral both in colour and substance, and they are borne abundantly in gracefully-drooping racemes. It is a native of Chili, whence it was introduced by Messrs. Veitch a few years ago. Specimens of it may be seen in flower at Kew in the greenhouse, and also against the walls outside. The fact of its being hardy much enhances its value.—W.

Shading Heaths.—Those who place Heaths when out-of-doors under the shade of trees, or in similar situations, can have little idea of the way in which both Heaths and Epacrises are brought to such perfection by London growers. At Messrs. Low's, Clapton, Heaths represent just now a miniature field of green healthy plants. There they get no shade whatever; on the contrary, they are fully exposed to the sun, receive abundance of water at the roots, and under these conditions they grow sturdy, hardy, and bushy, and eventually flower profusely.

A Few Good Fancy Pansies.—Among new seedling fancy Pansies exhibited by Messrs. Downie & Laird at Preston the other day we noted the following as being well worth attention, viz., Sunny Park Rival, deep blue with a dark centre; J. Douglas, claret with white edges; George Wood, velvety orange-crimson; and Mrs. Jamieson, black with well-defined, bright yellow margin. John Alloway, Mrs. Plummer, and David Evan were also excellent kinds.

Lapageria alba as a Pot Plant.—The rose-coloured Lapageria, though often grown on balloon-shaped trellises for exhibition, seldom makes an attractive plant, and it is therefore seldom seen at shows. The white-flowered variety, however, will make one of the finest exhibition plants in cultivation. Mr. Shuttleworth had a large specimen of it in his collection the other day at Preston loaded with blossoms, which, contrasted with the deep green foliage, had a fine effect. It was, without doubt, the finest plant of white Lapageria that has ever been grown in a pot.—S.

Plants in Flower at Colchester.—Out-of-doors Lilium auratum has opened its flowers; L. chalcedonicum, superbum, and pardalinum are in full force; L. Humboldti and its congener ocellatum are fully out; likewise the pretty Thunbergianum venustum, L. Leichtlini, and longiflorum eximium; L. Wallacei, quite a distinct new form, and L. Wilsoni promise to be open next week. Romneya Coulteri is showing a fair supply of blooms, which may expand at the end of the week. Freesia refracta alba has a few late blooms on it still, and Calochortus venustus, luteus, citrinus, and flavus (the old Cyclobothra flava) are now to the fore. Tulbaghia violacea, a small flower, but of a beautiful tint, is out. Hyacinthus candicans has fine spikes just coming into bloom. In our frames Watsonia plantaginea and humilis, Hypoxis Ruperi, Hesperantha cinnamomea, Roscoea purpurea, Rigidella immaculata, Cunninghamia trimaculata, Lapeyrousia corymbosa, Gladiolus Colvillei albus, G. purpureus amatus, and Habenaria psychodes show flower; and Brodiæa congesta alba fl.-pl. is still out. Amongst the Alliums, carinatum, flavum, angulosum, and sphærocephalum show flower-heads.—W.

Phyllanthus nivosus.—Associated with flowering stove and greenhouse plants, this is one of the most effective of plants. Large specimens of it furnish abundance of long shoots clothed with snowy-white and light green leaves. It is a plant which possesses a compact habit of growth; it requires neither staking nor tying, and it is devoid of that formal character too often found in stove and greenhouse plants. It has a fine effect when grouped with Dracænas or Crotons. P. roseo-pictus is a good plant, but not so showy or effective as the one just alluded to. We lately saw both kinds in good condition in Mr. Bull's nursery.

The Dell at the end of the Serpentine is well planted this year—not such a confusing wreath of tropical plants—and those used are more tastefully grouped than hitherto, with some space for open turf left between them.

Hardy Red Water Lily.—We learn that Messrs. E. G. Henderson, Pine-apple Nursery, have been fortunate enough to obtain a quantity of this fine Water Lily—large roots—some of them in bud. It is said by those who have seen it in its native lakes that it is the lovely white Water Lily in everything but colour, which is a clear Rose.

Double-flowered Agapanthus.—This is now in bloom in the Victoria Nurseries, Holloway. It is equally as floriferous as the type, and its blossoms, which are of a deep sky-blue colour, are found to be exceedingly useful in bouquets. Eventually this will doubtless become a favourite greenhouse plant.

Plumbago capensis as an Exhibition Plant.—Few specimen stove and greenhouse plants exhibited at Preston were more admired than this Plumbago, which from every part of the show was a conspicuous object. Its sky-blue flowers supplied a colour which no other plant can furnish at this season of the year, and, considering how easily they can be produced, it is surprising that it is not oftener seen at shows than it is. A vigorous young plant of it grown in good soil could be made to form a good-sized specimen in a couple of years or so, and, although its individual flowers do not last long, they are produced in such quantities in succession that little fear need be entertained that it will not be in bloom when required. It is best of all, however, trained on a high back wall or pillar in a cool house. If grown in this way, and the shoots allowed to hang carelessly down, it is the fairest of all greenhouse, wall, or pillar plants that flower late in summer and autumn.

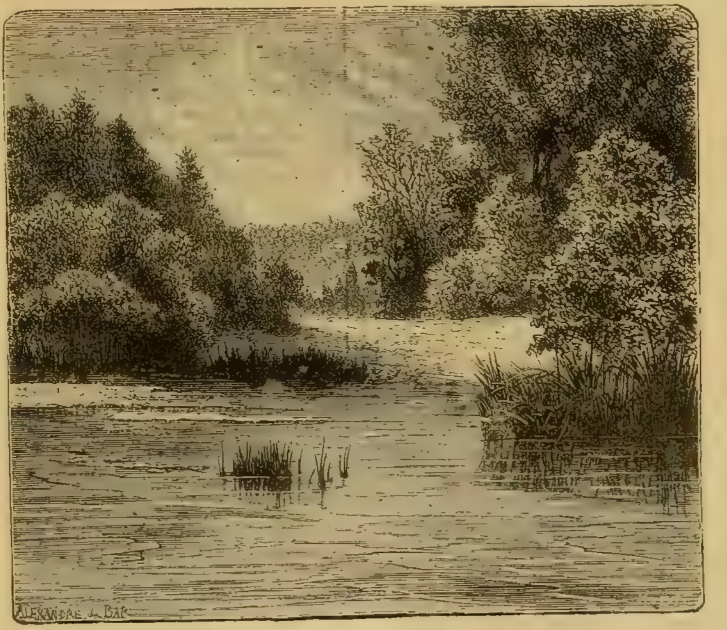
Plants in Flower at Tottenham.—Amongst many interesting plants in Mr. Ware's collection we noticed the white American Lysimachia clethroides, a good perennial; the large white Ornithogalum thyrsoides; Stokesia purpurea, a large Composite flower with pale lavender rays and a purplish centre; the pretty little blue Lapeyrousia corymbosa; the lilac Mimulus alatus, one of the kinds of little importance for gardens; a fine series of varieties of the common Everlasting Pea, among which the delicate rose-pink appears to us to be very desirable for general cultivation; several of the less conspicuous, but not the least beautiful, Gladioli; the white-flowered Brodiæa congesta; the handsome spotted Lilium Leichtlini; several good varieties of the American Swamp Lily, which appears to us to be one of the very finest of the American Lilies, although not so much talked of now-a-days as some of the Californian ones; Freesia odorata; Hyacinthus candicans; some of the rarer Alstrœmerias; and the curious Pelargonium melananthum.

Hardy and Half-hardy Salvias.—Has not "W." (see p. 59) made a mistake about S. farinacea? From his description I should say that the plant he mentions is not S. farinacea at all, but S. leucantha. His praise of S. porphyranthera is just and well merited. He should grow the true S. tricolor. I shall be happy to send him cuttings if he can send me S. interrupta, which I have lost. S. gigantea, as sent to me by Messrs. Smith, Newry, is what I have grown for years as S. bracteata. It is a very handsome plant, though rather coarse and straggling. I should be very glad to possess the true S. farinacea. A plant, which I cannot distinguish from S. taraxifolia, came up last year among some Indian seeds collected nearly forty years ago and kept in a dry warm place.—H. Harpur Crewe, *Drayton-Beauchamp Rectory, Tring.*

Abnormal Lily Stem.—Dr. Armstrong has sent us a fasciated stem of Lilium auratum which seems to have produced an unusually large number of blooms. The plant had another stalk besides the one sent, and on that there were thirty blooms. The bulb in question was planted three years ago in a Rhododendron bed, where it has ever since remained undisturbed.

WATER IN PARK AND GARDEN SCENERY.

The introduction of water into park and garden scenery lends a charm thereto unobtainable by other means. In many places water exists naturally either in the form of small lakes, ponds, or running brooks; but this is more the exception than the rule, and water effects have oftener to be secured by artificial means. Where water naturally exists there is but little difficulty, as we have but to fill in the outline which Nature has sketched to obtain a variety of pleasing and natural pictures. In the case of artificial lakes and canals there is a vast difference. In natural formations the surroundings are pretty sure to be in harmony; Nature seldom voluntarily assumes formal shapes or regular outlines, and it is more particularly in this respect that we should do well to follow the example which she invariably gives us. The more correct taste of the present time has happily banished from our gardens those monstrosities in the shape of clipped shrubs in which our ancestors delighted. It must be admitted that the planting and grouping of trees and shrubs has made great strides within these last few years; it is, therefore, the more surprising that the formation of lakes and similar pieces of water should still, as a rule, be conducted with such a disregard of the first principles which Nature has so plainly laid down for our guidance. Let me take as illustrations two examples which have come under my notice. The one is a sheet of water some acres in extent. It is of natural formation, and the margins and surroundings have, with but one slight exception, never been altered by the hand of man. On one side, where I should suppose the dwelling would be placed (the locality I am describing is quite wild and unenclosed), the margin of the lake is quite devoid of trees, and the eye rests upon a clear expanse of water. There is no bridge, no boat-house, no building of any kind to mar or obstruct the view. The opposite shore, if I may be allowed the term, is broken up into irregular miniature creeks, the margins of which are lined with Flags, Sedges, and other moisture-loving plants. The ground then gradually rises up to a plantation of Firs, the intervening space being studded with irregular masses of low-growing shrubs, Brambles, and Heath. On the right, in the foreground, is a small island, on which grow a solitary Willow and a few minor shrubs. On the left, the shore is broken up by masses of trees and shrubs, evergreen and deciduous, until it reaches two large islands, which have been planted with Rhododendrons and other shrubs, and between which the water is seen gleaming beyond. The *coup d'œil* is, as may be imagined, charming. The utter absence of methodical arrangement, the breadth of water, and the contrast afforded by the vegetation which fringes it, cannot fail to please even the most casual observer. Let us now describe that which is in all respects a perfect, but not by any means a pleasing, contrast to the foregoing. It is also a lake, but formed artificially, and one which has had no expense spared upon its construction. In shape it nearly approaches an oval, and about in the centre is an island which is almost circular. The banks and margins are turfed and well kept, and, with the exception of the privileged Willow, not a plant of any kind breaks their monotony. A neatly-built little summer-house stands out conspicuously, and at intervals there are some beds of flowering plants and clumps of shrubs. All this is pretty enough, but it can hardly be said to realise in any way our ideas of natural scenery. This is but a type of what exists in many places. In artificial creations it is not always possible to wholly obliterate the traces of mechanical agency; there must always be a certain amount of keeping which will in some degree induce formality. Still, much may be done to promote an appearance of natural beauty in such situations, and if the planting be done in an intelligent manner time will produce those free, graceful effects which no mere grouping can ever give us. It is just as easy to form broken, irregular outlines as it is to produce regular, unbroken curves and straight lines, and a little judicious planting, with subjects which will not only live but extend themselves, will speedily obliterate all traces of man's handiwork. The formation of islands in artificial pieces of water appears to me to be in many cases a mistake. The main purpose which islands serve is to break the monotony of a considerable expanse of water; but in the case of lakes of small dimensions they cannot be needed for that purpose, as in such instances we desire to get as large a surface as possible under our eye. Islands, in fact, should in any case be but sparingly introduced, and even then should not come immediately before the eye. They should lie away from the main points of view, so that they might not obscure the vegetation and outline of the opposite banks, and should not be crowded with a mass of foliage. A single tree of an appropriate character, with some low-growing shrubs and subaquatic plants, will sufficiently indicate the object without occupying a too prominent position. Nothing can be more charming than the presence of a natural stream of running water in garden scenery, and where this occurs there is little difficulty in securing graceful and natural effects. In artificial canals and streams the same fault would often appear to be committed as occurs with respect to lakes and ponds—Nature is subordinated to art. If we follow but a short distance the course of a stream or small river, what do we see? We find the banks in some places worn into hollows and cavernous recesses; we see in the summer time, when the river is low, the traces of winter floods, which wear away the soil here and there, gradually encroaching upon the land which borders it, while in other places it deposits a mass of earth and *débris* which becomes a nucleus for the formation of groups of such plants as delight in moisture. In some places we see the banks high and far above the water level, in others the water at times overspreads them. These diversities of formation and the attendant variability of the vegetation may always be introduced more or less into all kinds of water scenery, whether large or small. Whether it be a lake acres in extent, or a mere fishpond, there is always scope for realising natural effects; but it is by no means necessary to employ a mass of vegetation for this purpose. Close and indiscriminate planting, indeed, often defeats the end in view. A single tree, with a few smaller subjects around it, and a clump or two of Flags or other water plants in the foreground,



Broken Margins to Artificial Water.

will tend more to give a notion of natural formation than the most elaborate grouping could do. It is not so much the quantity of subjects as their variety and the knowledge of placing them so that they are in harmony with the situation in which they are put that is required. J. Cornhill.

Byfleet.

THE FRUIT GARDEN.

GRAPES ON OPEN WALLS.

The Grape may even yet be called a neglected fruit as regards open-air culture, for, although no fruit is grown so largely or so well under glass, I question if the merits of any have been so systematically ignored on open walls. The best examples are usually found on cottages, where, on warm gable-ends, in many cases protected by an overhanging thatched roof, fine crops are produced year after year; and in favourable autumns the luscious sweetness of this fruit forms one of the greatest delicacies obtainable at rural desserts, and even in bad seasons a really good wine is made from the produce, though in a partially ripened condition. Much, however, might be done in the way of pruning and training to assist the earlier maturation of the fruit. In the first place, if a favourable wall be at command, viz., one that gets a maximum of sunshine, or an aspect facing between south-west and south-east, the soil should be well broken up by deep trenching early in autumn, and, if poor, some decayed manure, or, in preference, some loads of fresh turfy loam, should be added; as a rule, however, soil that has been in cultivation will be found to be quite rich enough for open-air Vines, as success depends more on getting moderately strong growths well matured than in producing an unnaturally luxuriant growth. If the Vines are in pots, they may be planted out at almost any season of the year, but the roots should be thoroughly separated. If in leaf, shading for a few days will be advantageous, and they should have a damping overhead, which will quickly start them into active growth. But as they may safely be planted any time during what is called the dormant season, the best plan would be to perform that operation as soon after the fall of the leaf as possible. If a good-named variety be not available, the best plan is to get a layer that is well rooted from a Vine that produces good crops in the neighbourhood. Young, ripened shoots of one year's growth, if brought down from the wall and partially buried in the earth, will make good rooted plants the following season. As regards sorts, the Sweetwater and Muscadine for white or rather yellow Grapes, and the Esperione and Miller's Burgundy for black, will succeed in ordinary situations; Black Prince also always colours well and produces fine bunches.

As regards training, the principal point is to keep the main shoots a good distance apart, so that when they produce fruiting spurs they may have room to fully develop their foliage without the shade becoming so dense as to entirely darken the wall, as it is the latent heat that is absorbed by the wall during sunshine, and that is again given off when the atmosphere gets colder than the temperature of the wall, that is of benefit to the Vines. The leading shoots should be nailed or tied to strong supports in the wall as they progress in growth, as, being brittle, they are easily broken off by rough winds. The bearing shoots should be stopped at one joint beyond the bunch, and only one bunch should be left on a shoot. Some varieties, especially the Sweetwater, are so prolific, that they produce three times as many bunches as they can bring to perfection, and not only the bunches but the berries in them need thinning if good fruit be desired. All lateral weakly growths should be kept pinched off, as they only shade the principal foliage. A very common notion prevails that removing the foliage in dull, sunless summers will promote the ripening of the fruit; but this is a mistake, and when carried to excess not only spoils the crop, but quite paralyses the Vine, checking the ripening of the wood on which future crops depend.

I do not wish to advocate the wall culture of Vines in any sense as superseding that under glass; nor would I recommend any one to make an open-air Vineyard, except in exceptionally favourable sites, but I look on the wall fruit tree culture of small gardens as about the weakest point as regards their management. I have seen hundreds of good flower, vegetable, and mixed fruit gardens managed by amateurs, but, as a rule, their walls have presented an unprofitable aspect. The reason of this is that usually the best positions are assigned to Peaches, Apricots, and Cherries, which, if carried safely through the flowering period, are still liable to have their foliage more or less destroyed by insect pests, to the attacks of which they at length either wholly or partially succumb, while if the same amount of labour were expended on that portion of the wall space devoted to Vines, far more fruit fit for dessert would be the result. Nothing repays a little extra care better than the Grape Vine; even in seasons when all who allowed their wall Vines to take their usual haphazard course have been complaining of the inclemency of our autumns and the non-ripening of their fruit, others, who really paid attention to Grape culture, have had satisfactory results. I have seen very good examples of Black Hamburghs grown by amateurs who made a speciality of their Vines. In large gardens it might be worth while to devote a small portion of a good aspect to Vines, in order to see what could be realised by means of glass copings that are in many cases lying idle during the autumn months.

Out-of-door Vines enjoy comparative immunity from insect pests, and they are less afflicted by disease than most fruit-bearing trees, while as respects longevity, as they root readily from any portion of the ripened wood, it is quite possible to keep a wall furnished with fresh bearing wood on its roots by layering shoots in succession at the base of the parent Vine; in fact, one of the most important points in Vine culture is to keep a succession of young bearing wood from base to summit, for although the class of Vines suitable for open walls are of such a fruitful nature as to produce plenty of bunches under the most primitive kind of pruning and training, the most casual observer will note that the finest fruit is on the previous year's wood. Therefore, at the winter pruning, some of the oldest rods should be annually taken out to allow space for an equal number of young rods to be trained in. Perhaps the greatest enemy open-air Vines have is mildew, from which, in some seasons, they suffer severely; but sulphur carefully dusted amongst the leaves on the first sign of its appearance will generally be found efficacious in checking it. I feel confident that even those who have small gardens would do well to turn their attention to outdoor Grape culture, which would yield good returns for the labour expended on it during, at least, average English summers. J. Groom.

WATERING FRUIT TREES.

Sudden changes from extreme humidity to parching drought must greatly affect the vital forces of all fruit trees, but especially those carrying heavy crops of fruit. The drooping foliage and prematurely falling fruit sufficiently testify to the truth of this assertion. I believe, too, that the ill effects of ungenial atmospheric influences in summer are more permanent in character than is generally supposed. We are too apt to lose sight of this and to ascribe all our troubles in fruit culture to the prevalence of spring frosts. No doubt the latter are destructive, but no one can observe the sufferings of fruit trees during sudden and severe periods of heat and drought without being convinced that a good supply of water and some ready economical means of applying it would have a wonderful effect in keeping the trees healthy, and consequently more fruitful. In some measure the tendency of cultivation is to alter the character, habit, and perhaps in some degree the constitution of fruit trees, slowly, it may be, but none the less surely; indeed, one of the professed aims of modern cultivators is to induce surface rooting, and to this end various expedients (such as grafting on particular stocks, root pruning, &c.) are adopted, which, though they bring the trees more under the cultivator's control, and, so far, are a benefit, yet at the same time add to his responsibilities by making them more dependent upon his care. I cannot help thinking that if the importance of this matter had been more fully recognised, more adequate means would have been ere this provided to supply their wants during times of trial. Surface mulching, of course, will do much, but this ought to be supplemented occasionally with a thorough soaking of water; but if the water has to be carried by hand some distance the chances are that the watering will not be effectually done, even if orders are given to that effect. Few kitchen or fruit gardens are so well supplied with water as they ought to be. In some cases that have come under my notice, where the flower-beds have been well cared for the vegetables and fruits have had to depend mainly upon what has fallen from the clouds, and I need not say that in dry seasons inferior produce is the result. During the last forty years the drainage of the country has undergone a gradual, but at the same time a great, change, and in discussing this question this should not be lost sight of, as it appears to me to render more urgent the adoption of improved appliances for successfully coping with severe drought. If watering is to be effectually done, some cheaper and more efficient means than manual labour must be resorted to; indeed, when one thinks over the matter there is cause for wonder that on this matter of watering the same methods and the same implements are in use now in most country gardens as were common a century ago, when surrounding circumstances were so different. The mowing machine has, by banishing the scythe from the lawn, economised labour as well as effected an improvement in its appearance, and I have no doubt that the same result would follow the introduction of some simple, but efficient, system of hydraulics for the application of water to fruit trees and vegetables at a time like the present. Fruits of all kinds contain a considerable amount of water, and if the supply of that fluid be cut off when they are in the midst of their growth, both the crop and the individual fruits must be small. In difficult times all trees of any considerable age generally contrive to get rid of a good portion of their crop, and it is no uncommon occurrence now to see almost as many Apples lying under the trees as there are remaining on them. A mulching and one thorough soaking with water every week or so would have saved them, and, where plenty of water is available, it benefits the trees greatly to give them a good washing overhead occasionally. I noticed the other day a neighbour with horses and water-carts watering the trees in his orchard, and no doubt the plan was a wise one, but how few gardeners can call in the aid of extra help at such a time. It is, in many cases, the first outlay for pipes and pumping gear that stops the way, but I am convinced that the investment would, in most cases, be a profitable one. In our climate we never have too much sunshine, and it is only where irrigation is neglected or altogether disregarded that a long continuance of bright weather does harm to growing crops. E. Hobday.

CLASSIFICATION OF APPLES.

By Prof. W. J. Beal, of Lansing, Mich.

A natural classification would be one in which every distinguishing feature of the plant was considered, giving each character its due weight. This would include the peculiar features of the young embryo as it began to germinate, following on with every step in its growth to a mature plant bearing fruit. In such a classification nothing must escape notice. The twigs, buds, leaves, all parts of the flowers, fruit and seeds—every point must have its due weight in determining the relations of each variety to all the others. The varieties of Apples have become so numerous, that each should be more completely described than has generally been customary. In defining wild plants, the botanist places great stress on the peculiarities of the flowers. I believe these characters are of great value in describing our Apples. I will briefly describe and compare the flowers of a few of the varieties first examined. The petal of the Red Astrachan is ovate, and, on the average of many specimens, is 1¼ in. long by ¾ in. broad in the widest place. The petal of a Talman's Sweet is elliptical, twelve-sixteenths by seven-sixteenths, just about long enough to reach across the widest part of a petal of the Red Astrachan. The petal of the Porter is nearly orbicular, cordate at the base, with a very short claw or stem. It is twelve-sixteenths by thirteen-sixteenths of an inch in breadth and length. The petal of a Sweet Bough is broadly ovate, or elliptical ovate, measuring fourteen-sixteenths in. across the surface, having a distinct claw. This is enough to show something of the great value of the petals in describing Apples. On the Red Astrachan the styles are seven-twelfths of an in. long, united for one-third in. to two-fifth in., and then diverging. They are slightly pubescent where they begin to separate; above and below they are smooth. In the Talman's Sweet the styles are five-sixteenths of an in. long. The upper half of the five styles is closely covered and matted together by a dense woolly substance. In the flowers of the Jersey Sweet the styles are short, stout, and twice the diameter of those in the Seek-no-further. The "Journal of Horticulture," 1876, p. 185, gives something of a new classification of Apples by Dr. Hogg. The only new points used are those based on the shape of the calyx-tube and the position of the stamens in the tube. The calyx-tube varies in form from conical to funnel-shaped, and is seen between the eye and the core on making a longitudinal section of an Apple through the centre. The stamens form a bristle-like fringe round the inner surface of the calyx-tube. Some form a fringe immediately under the base of the segments, and are called marginal; others are medium; others situated near the base are called basal. To test the value of these new characters of Dr. Hogg, I have examined a large number of our Apples. In the first forty-eight varieties examined, seven had the stamens marginal, twenty-four medium, three basal, eight between marginal and medium, six between medium and basal. As we should expect in any character, it is sometimes very decisive and of much value, while in other cases it varies or is so near midway between two forms that we can make little use of it. An artificial classification is based on some one point or a few points of difference, ignoring all other points, any of which may be important. As an illustration, we may call all Apples sweet or sour, large or small, striped or not striped. So in botany, the best artificial keys in our text-books require the student to divide only one, two, or three points at a time. This one divided, he leaves it for the next, and so on until the specimen is separated from all others. Mr. A. J. Downing believed the classification of Apples to be impracticable, and arranged his fruits in alphabetical order. Mr. Thomas Barry, Dr. Warder, and some others, have arranged the varieties in a way to assist a person in finding the name of an unknown fruit. Many of us would like still more aid to make it easier to trace out an Apple. If an Apple is of such a size as to make it doubtful whether to call it large or medium, place it in both classes in the key. So with other points which are likely to be misunderstood as to shape, time of maturing, &c. Many fruits are still very imperfectly described. To make use of the new characters of the flower, it will be necessary to go again over all the work of others in examining fresh specimens when in flower and in fruit. In the classification which I have adopted, I first decide whether the Apple is sweet or sour; second, is it ripe in summer, autumn or winter; third, is it striped with red, not striped nor russet; fourth is it flat, round, conical, or oblong. These four points can be expressed in a key on two pages of a book facing each other. At the end of each line in the key I give the page on which to continue the investigation. After making use of these four classes, I do not pursue any definite order, but make use of just those points which seem to me most characteristic. In some it may be the basin; in some this may not be a marked feature. I seize whatever is the most striking point for contrast between any two Apples or lot of Apples in hand.—" American Pomological Society's Proceedings."

PERMANENT STRAWBERRY PLANTATIONS.

In making Strawberry plantations anything in the way of early returns and fine crops depends upon the preparation of the plants and of the ground. Plants put out of pots—that is, old forced plants—do not root deeply; hence they bear well for only one or two years, and are then useless. But young plants from runners, put out in a good soil, will send their roots down 2 ft. or 3 ft. Ground for a plantation should therefore be trenched two or three spades deep, or at least be deeply dug. In either case it should be well manured with stable-yard or cow manure, crushed bones, fresh loam, or any good manures, which should not, however be buried in the bottom of the trench, but be turned in with the spade in the digging. This renders it accessible to the roots at once. It is a good plan, indeed, when the ground is trenched, to trench in the rough manure, and then dig or fork the ground over afterwards, just one spit deep, turning in at the same time another dressing of manure of a more rotten description for the benefit of the young plants, as, when the manure is all put in at the trenching and deeply buried, the plants hardly get the benefit of it till the second year. In gardens where the soil is thin, trenching cannot be advantageously practised; but the want of trenching may be made up for by manuring with the more retentive manures, of which that of the cow is best, and mulching during the summer season. Mulching, indeed, should always be practised on thin and poor soils. Short stable litter is about the best material that can be employed for the purpose, and the more horse manure there is amongst it the better. It then acts both as a mulching and a manure; the rains wash the strength of it down to the roots just when the fruit is swelling and the plants are needing support. No time should now be lost in securing runners. If stock has to be procured from a nursery, there is little chance of a crop the year following, for nursery plants are seldom strong. But if they can be propagated at home or in a friend's garden, a good crop this time twelvemonth is a certainty. No plants bear so abundantly for their size, or have such fine berries, as young plants propagated and planted the year before. The late Mr. M'Ewen, who wrote on the Strawberry, has stated the number of berries he gathered from one stool planted the August previous; we forget what the quantity was, but it was enormous. It was usually from his young plants that he gathered his finest fruit for exhibition, and he was successful everywhere he went. It is no advantage whatever to layer the plants in pots. The best and most expeditious plan is to prepare a heap of good soil, loam principally, mix it with half-decayed horse manure or old Mushroom manure—or, failing these, Standen's manure, which well repays its use—and lay the same in a flat ridge, 4 in. deep, between the rows of Strawberries. On this ridge the runners should be laid, with a stone a few ounces in weight behind them to keep them in their places. Afterwards they will need attention in pinching, for it is necessary that all the strength be concentrated in the layered runners, and to see that no fresh runners are produced beyond. A look over once a week or ten days will be enough for this, and, with watering occasionally in dry weather, the plants will be broad and strong by the end of July or beginning of August, when they must be planted. The ground having been prepared as before directed, the plants should be taken up with a trowel with good balls to each, which can easily be secured with a little care, and planted up to their collars 2½ ft. from row to row, and 18 in. between the plants. Some cultivators plant three plants together in a triangular patch, which is a good plan, but the patches should in that case be 2 ft. apart. The work of making a plantation is finished with the getting in of the plants, which want little or no attention till next spring, when the ground may be stirred over with the hoe between the rows, and mulched with short Grass or manure, and the result waited for in the shape of a fine crop of fruit. After the crop is gathered some remove one or two of the three plants of each patch, as, if they were all left, they would get too thick on the ground. A good deal, however, depends upon soil, and, as we should have stated, upon the variety. In some strong soils we have seen such sorts as Keen's Seedling, British Queen, and Sir Charles Napier have little enough room at 2½ ft. between the rows, considering the importance of letting the air and sunshine in among the fruit in wet weather to dry it; but dwarfer sorts, like Black Prince, will do well in most soils at 18 in. between the plants and between the rows. Thinning out the plants, therefore, at the end of the year must depend upon these circumstances. If they grow very rank, thin to one plant; and if moderate growth only is expected, leave them as they are. S.

Poisoning by Peach Stones.—A fatal case of poisoning by Peach stones, which has just occurred in Paris, may serve as a warning to families in which children are allowed to look after themselves for hours together. It may be assumed that very few children under the age, say of ten or twelve, have any idea that Peach stones are dangerous. They have been shown the deadly Nightshade, and probably the wild Hemlock, and have a dread of them, but the dangerous character of Peach stones has never been pointed out to them. The victim of the recent accident in Paris secreted the stones of a number of Peaches, and, possessing himself of a hammer, when left alone broke them open industriously and eat them, the result being that he was poisoned by prussic or hydrocyanic acid. It is as well, now that the season for wall fruit has arrived, to explain what extent of poisoning properties is possessed by the Peach stone. Writers on toxicology state that 1 oz. of the kernels contains about one grain of pure hydrocyanic acid, and it is known that one grain of that poison will almost to a certainty kill any adult person. Two-thirds of a grain has very often been fatal, and, indeed, may be regarded as a fatal dose for a child.

Peach Prince of Wales.—This is an excellent midseason Peach, large, high-coloured, and of good flavour; and the tree has a good constitution. A market grower told me the other day that it always fetches the best price in Covent Garden.—E. Hobday.

GARDEN BOTANY.

(Continued from p. 71.)

Flowers of Grasses.

The flowers of Grasses are arranged in spikelets, which bear one or more flowers and are loosely disposed, as in the Oat, or densely, as in the Wheat. They are enclosed in the chaffy bracts (glumes), and what is generally regarded as representing the perianth of other plants is quite rudimentary, and in some species there are no traces of it. A spikelet, whether it contains one or more flowers, is, with few exceptions, enclosed in two outer glumes (fig. 357), and each flower is subtended by two scales. One of these is similar to the outer glumes, having a central rib or keel, is often furnished with a bristle (awn), and usually embraces the other in the bud: this is the flowering glume. The inner has two lateral ribs and no midrib, and is designated the pale (fig. 357). Fig. 355 represents a flower of Wheat removed from the spikelet and divested of its glumes. At the base are two lodicules, forming the perianth. In Phleum (fig. 358) the outer glumes are awned. During the flowering period the glumes and pales spread out and afterwards close over the grain, and the pale and flowering glume adhere to the ripe grain. The grain, it may be added, consists of a single seed and the adherent pericarp. The pericarp, it should be explained, consists of the wall of the ovary alone, as in Wheat and Rye, or of the wall of the ovary and adherent pale, or pale and flowering glume, as in Barley.

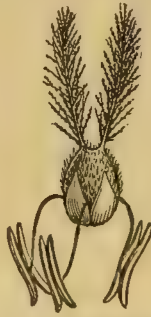


Fig. 355.—A single flower of Wheat, removed from the spikelet; the two small scales at the base represent the perianth.

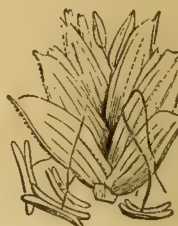


Fig. 356.—Spikelet of Wheat. Enlarged.

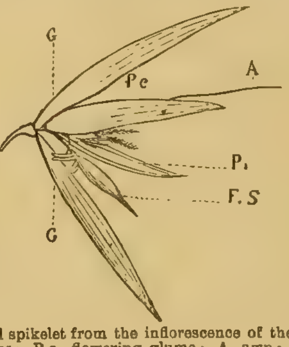


Fig. 357.—Expanded spikelet from the inflorescence of the Oat; G, outer or empty glumes; Pe, flowering glume; A, awn; P l, pale; F S, sterile flower.

Æstivation.

Sepals and petals, and the lobes of a gamosepalous calyx or gamopetalous corolla, are variously folded or arranged in the bud. The manner in which they are folded is constant in a species, and the same type of folding usually prevails throughout a genus, and, in some instances, throughout a natural order. This folding is termed the æstivation, of which there are two distinct types. When the edges of the petals or sepals meet at the margins only, and do not overlap each other at all, they are valvate in æstivation. The petals of the Grape Vine (figs. 359 and 360) are valvate in æstivation, and the sepals of the Mallows and Hollyhock, and indeed of all the Malvaceæ, are valvate. When there is any overlapping of the margins of petals or sepals, the æstivation is imbricate (fig. 361, &c). The valvate type of æstivation obviously cannot vary much, but there is a wide scope for diversities in the overlapping of petals, &c., in imbricate æstivation. Valvate petals may have in the bud their margins directed towards the centre of the flower, so that parts of the outer surfaces of contiguous petals lie face to face; or the margins may be directed outwards, so that the inner surfaces of contiguous petals are applied to each other. Names have been given to these variations of the valvate type of æstivation, and also to many variations of the imbricate type, but very few of them are in general use. Some of the variations of the latter are, however, worth distinguishing. When one edge of each petal is inside and the other outside, as in figs. 363 and 364, the æstivation is twisted or contorted. All the Malvaceæ have contorted petals. The æstivation is decussate when the petals are in opposite pairs and the outer or lower pair overlaps the next, as in the Holly (figs. 365 and 366). Another variation of the imbricate type is common to all the members of the large sub-order Papilionaceæ of the Leguminosæ. Here the upper petal, the standard, is always outside along both edges, and often quite enfolds all the others in the bud (figs. 367 and 368). The reverse obtains in the Cæsalpineæ, also a sub-order of the Leguminosæ. Cercis siliquastrum, the Judas tree (figs. 369 and 370), is a familiar example, both edges of the upper or posterior petal being overlapped by the lateral petals. Verbascum Thapsus (figs. 371 and 372) has the anterior petal with both edges covered in the bud, and one of the others wholly outside. Some botanists would restrict the term imbricate to the kind of æstivation characteristic of Atropa Belladonna (figs. 373 and 374), where two petals of five are inside and two outside, and the other with one edge overlapped and the other overlapping. A very unusual condition of the petals in the bud occurs in the Poppies, where they are intricately crumpled.

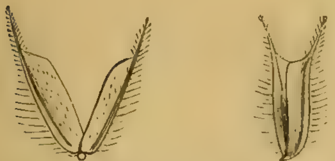

Glumes open. Glumes closed.

Fig. 358.—Phleum pratense.

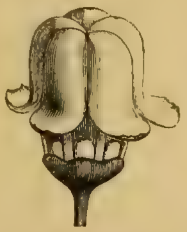


Fig. 359.—Flower-bud of Grape Vine, showing valvate æstivation of corolla.

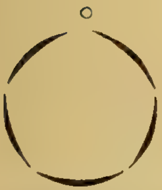


Fig. 360.—Diagram showing the plan of valvate æstivation.

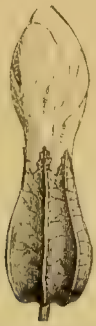


Fig. 361.—Flower-bud of Pedicularis palustris, showing the æstivation of the corolla.

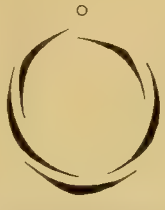


Fig. 332.—Diagram of a corolla of Pedicularis palustris; both margins of the anterior petal outside of the lateral petals.

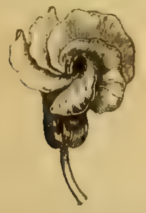


Fig. 363.—Flower-bud of Hermannia denudata, æstivation contorted.

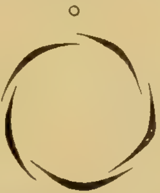
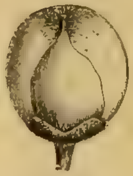


Fig. 364.—Diagram of contorted æstivation.


Fig, 365.—Flower-bud of Holly; an example of decussate æstivation.

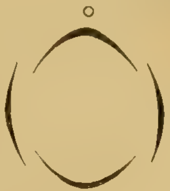


Fig. 366.—Diagram of decussate æstivation.

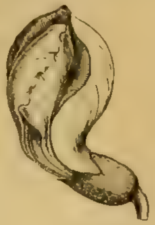


Fig. 367.—Flower-bud of Phaseolus, showing the æstivation of the corolla.

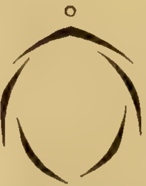


Fig. 368.—Diagram of a corolla of Phaseolus; upper petal wholly outside.

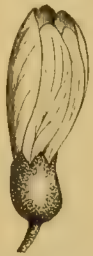


Fig. 369.—Flower-bud of Cercis siliquastrum, showing the æstivation of the corolla.

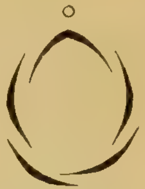


Fig. 370.—Diagram of a corolla of Cercis siliquastrum; upper petal wholly inside.

The Andrœcium (Stamens).

General Observations.—We have now to review the principal types of modification exhibited by the andrœcium and gynœcium. There are flowers destitute of perianth of any kind, but a fertile flower, a flower that is to fulfil the function of a flower, must contain, or consist of, either a gynœcium or andrœcium or both, as these are the organs of reproduction.

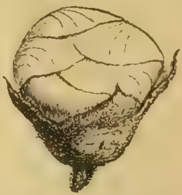


Fig. 371.—Flower-bud of Verbascum Thapsus, showing the æstivation of the corolla.

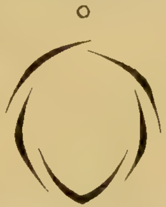


Fig. 372.—Diagram of a corolla of Verbascum Thapsus; lower petal with both margins inside the lateral petals.

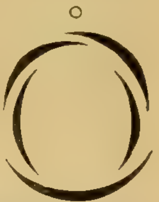


Fig. 373.—Diagram of a corolla of Atropa Belladonna.

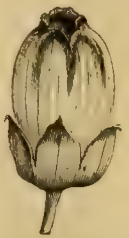


Fig. 374.—Flower-bud of Atropa Belladonna.

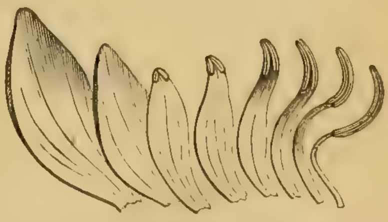


Fig. 375.—White Water Lily (Nymphæa alba); gradual transition from petals to stamens.

Andrœcium is the name given to the stamens collectively whatever their number or arrangement. With rare exceptions, the stamens are very differently formed bodies from the petals; in the white Water Lily (fig. 375), however, there is a gradual transition from perfect petals to perfect stamens. The innermost stamen, or that on the extreme right in the figure, has all the parts of the most highly organised condition of that organ. A perfect stamen consists of two distinct parts, a filament and an anther (fig. 376). When the filament is exceedingly short, as in Verbena, or quite obsolete, as in Orchids, the anthers are sessile. The anther is the essential part of a stamen. It is a hollow body, having usually two compartments or cells—seldom one or more than two. The cells are usually parallel, as in fig. 377, and that part of the anther which bears or connects the cells is the connective. Within the anther cells the male element necessary in fecundation originates, and it receives the name of pollen.

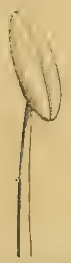


Fig. 376.—A perfect stamen; a, anther; f, filament.

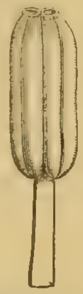


Fig. 377.—Stamen with two-celled anther.

Different forms of pollen.

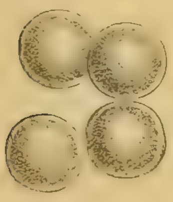


Fig. 378.—Pollen of Ranunculus repens.

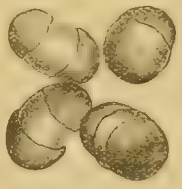


Fig. 379.—Pollen of Pinus Laricio.

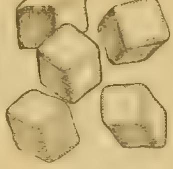


Fig. 380.—Pollen of Basella rubra. All very much enlarged.

VARIETIES OF POLLEN.—The ordinary condition in which the pollen issues from the anthers is in separate minute one-celled yellow granules, forming a powder, which is very copious in some plants, especially in many of the Coniferæ. When the anthers are discharging their pollen it disperses in quite dense clouds. The separate granules of pollen are of diverse shapes, and the surface is often beautifully marked or pitted or otherwise embellished. In the Buttercup (fig. 378) the granules are spherical; and in Basella (fig. 380), of the form of cubes. The pollen is simple when each granule consists of a single cell, and compound when more than one-celled. In Heaths and Epacrises, many Mimoseæ (Acacia, &c.) and Coniferæ, &c., the pollen grains are several-celled. In Pinus, for example (fig. 379), each grain is three-celled, the end cells being opaque and the middle one transparent. Perhaps it is more correct to say that compound pollen grains consist of a number of granules in a state of cohesion. The pollen granules of most Orchids are variously combined together by viscid elastic threads, and each agglomeration is a pollen mass or pollinium. From one to four pollen masses are developed in each cell of the anther, and they are either sessile or stalked, that is to say, the mass is borne on a slender stalk (caudicle). At the base of the caudicle is a viscid expansion termed the gland (figs. 381 and 382). The pollen masses of Listera Nidus-avis (Bird's-nest Orchis—fig. 383) are less compact than those of Orchis maculata and Habenaria chlorantha, and unprovided with a caudicle. Another family, the Asclepiadeæ (Hoya, Stapelia, Asclepias), has the pollen cohering in masses, often in pairs (fig. 384).

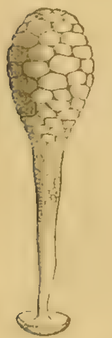


Fig. 381.—A pollen-mass of Orchis maculata; c, caudicle; r, gland.

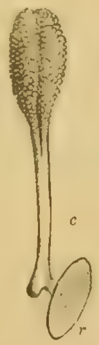


Fig. 382.—A pollen-mass of Habenaria chlorantha; c, caudicle; r, gland (retinaculum).

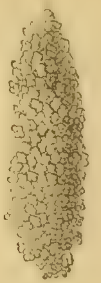


Fig. 383.—Powdery pollen-mass of Listera Nidus-avis.

VARIATIONS OF THE CONNECTIVE.—Commonly the cells of an anther are contiguous and either parallel or end to end, and the connective simply serves to unite them; but the Melastomaceæ (Medinilla, Pleroma, Heeria, &c.) are remarkable in having the connective furnished with spur-like or thick, fleshy appendages, and the connective of the Violet is produced above the anthers; those of the two anterior stamens have also a filiform appendage which protrudes into the spur of the petal. In the Hornbeam (fig. 385) it is branched, so that the cells are separated, and each branch terminates in a tuft of hairs. A still greater isolation of the cells occurs in Salvia (fig. 384), and the lower cell of each stamen is abortive. Finally, the connective is either continuous with the filament, as in fig. 377, when the anther is adnate and immovable, or the attachment is above the base of the connective, often about the middle, when it is versatile and oscillates freely (fig. 387). Grasses, Lilies, &c., have versatile anthers.

W. B. HEMSLEY.

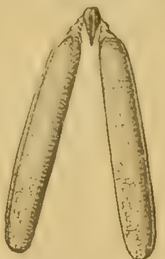


Fig. 384.—Pair of pollen-masses of Asclepias floribunda united by their glands.

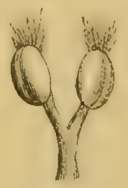


Fig. 385.—A stamen of the Hornbeam (Carpinus Betulus), the cells on separate branches.

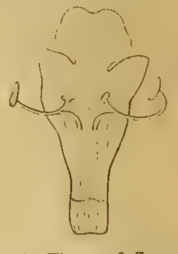


Fig. 386.—Flower of Sage cut open to show the stamens in which the cells of the anther are separated by a long connective, and the lower cell is abortive.

Dipladenias at Holloway.—These form a striking feature just now in Mr. Williams' nursery. The plants, which represent all the best kinds, are, for the most part, grown in pots, their main shoots being trained round balloon-shaped trellises, whilst the flowering branches are allowed to entwine themselves on strings strained along the roof, a good plan, inasmuch as a fine display can be made in the house in which they are growing, and, should the plants be required for exhibition purposes, the strings can be cut with the shoots attached to them, and be twined, with little trouble, round the trellises. With all trailing plants which are required to flower well it is highly necessary that the wood should be well ripened, and this can be best realised by training them on strings under the roof close to the glass. Wires are sometimes used, but they are more troublesome than strings, as the shoots must not be allowed to twine round them, as, if they do, much labour is involved in unwinding them, an operation, too, which is far from being beneficial to the plant. The best way, therefore, is to tie strings to the trellis and then attach them to the roof, allowing all young shoots to grow round them that seem inclined to do so. When wanted for exhibition, string shoots and all can be tied round the trellis, and when done flowering they can again be unwound and tied up to the roof to ripen.—S.

NOTES ON COLLECTING PLANTS.

A Collector's Outfit.—Before entering on a botanical ramble let us see what we shall need to take with us on the trip. On an ordinary excursion it is well to be provided with both portfolio and botanical box. The former is preferable in most cases, for with plenty of specimens in it its capacity is quite unlimited, and, besides, there are many occasions in which plants of a delicate texture, or having ephemeral floral parts, as many of the aquatics, the Helianthemums, the Tradescantias, and others, would be greatly impaired by carrying home first before putting in press. Plants of this class should be put into portfolio or press immediately after being gathered. On the other hand, a box is very essential to carry plants which we wish to examine fresh, and also plants having thick roots, large fruits, &c. When the collector's time is limited, and we wish to explore as large a territory as possible in the period at our disposal, for instance, while a train or boat is delayed, or having only a leisure hour's run in the fields and woods, then necessarily the box becomes the favourite. Also on a windy day it is perhaps preferable; for there is little that is more vexatious or calculated to call out the "Old Adam" of our nature than endeavouring to put specimens into the portfolio when a lively breeze is playing among our papers and specimens, and no place handy to seek shelter from its airy and sportive caresses. For home excursions, if the portfolio be well stocked with paper, the box need be quite small. The one I have used with much satisfaction is of oval-cylindrical shape, 17 in. long, 4 in. deep, by 6 in. wide. It is light and convenient to carry, provided with a light strap to throw over the shoulder, and so attached to box near front narrow side as to have the lid open from the person when hung on the shoulder. The lid opens nearly the whole length of one of the flat sides—15 in. by 4½ in., with ¼ in. lap—made to fit as tight as possible, and fastens with a simple spring catch, effective and convenient, a great improvement over the old way of fastening, which has to be held in place with peg or key. I have seen and used a number of different boxes, but I give my preference decidedly to the one described above. For extended trips, I formerly used a much larger box with a lunch compartment at one end. It is 21 in. by 9 in. and 6 in. But it is much too heavy to carry with the portfolio, and in fact too heavy, even when used alone, for mountain rambling. For long trips when the collector wishes to bring home a large number of fresh plants, I should prefer, instead of such a large cylindrical box, one made something like an old-fashioned trunk with a wooden handle in the lid to carry it by. It should be large, say 21 in. long, 12 in. wide, and 12 in. high to the top of the lid, which opens like that of a trunk, and is very convex. It is to be left in some central place, or where we make our headquarters for the night, and made a kind of depository, while the small box is used for collecting. Of course this plan is feasible only where we expect to radiate around one or more central points during the trip, yet I have made many extended excursions and always found it practicable. The chest is portable and not so heavy as a large box of usual pattern, and in travelling, if desirable, the small box can generally be carried inside the chest. Such a tin chest keeps plants fresh and handsome a long time, and permits a better arrangement and easier handling of the contents.

The Portfolio,

the usual size of which is 18 in. by 12 in., is subject to some variation in its arrangement. Some collectors prefer simply two pieces of binder's boards covered with enamel cloth and merely fastened together with a strong cord or strap. This filled with specimen paper is ready for the excursion. Simple and well-adapted to field-work, is the verdict in its favour. After several years' use I have found one made after the following pattern at all times give excellent satisfaction, and it has some advantages not found in the other, though costing a trifle more. It is made of two rather thick pieces of binder's board, covered like the first, each having a handle like a carpet bag for carrying. One of the sides has a stiffish bottom interior apron to keep the papers from slipping, and both of the sides are fastened together at bottom with two or three small buckle straps that can be let out when the portfolio is filling up. Similar straps are in front and one on each side, but these are seldom used, and instead there are a couple of straps attached which go around the whole portfolio, so that small or heavy pressure can be given as desired. By using more driers and changing, I can preserve plants very finely in the portfolio when travelling, but this is a secondary consideration, the main use of the portfolio being to collect for home press, and for this purpose not much pressure is required, merely sufficient being demanded to hold the specimens snug and not allow undue shrivelling. The portfolio should be stocked with a sufficient quantity of thin unsized paper—folded sheets; tea-paper will answer, but it is not very good economy to use sheets so much smaller than portfolio, for of small plants a sheet will not hold so many specimens, and besides such small sheets finally bring the plants too much in the middle of the pile when pressing, making it too rounding to press evenly and well. It is better to have specimen (I will call them by that name) sheets of nearly the size of the portfolio, and driers 18 in. by 12 in. I prefer a poorish quality of printing paper. The folded sheets are 11 in. by 17 in., and this allows for shoving a little, and keeps the edges from getting curled and torn. 11 in. by 16 in. is a good size. It costs 9s. 6d. to 10s. 6d. a ream, according to quality, at any paper warehouse, and usually comes double the size required, but it is easily cut and folded, each ream giving 960 folded sheets. This is as cheap, notwithstanding the difference in size, as tea-paper which costs about 3s. a ream—a ream of this having only 320 sheets. I have used also rather largely for specimen sheets thin manilla paper. It is excellent for coarse, rough plants, as it is stronger than white paper, lasts longer, and gives very nearly as good results. I insist strongly upon the importance of using specimen paper in pressing. Do not attempt to get along without it. Many plants, as Caulophyllum, the Dentarias, many of the Cruciferæ and Leguminosæ, and others outside of these Orders, are so delicate and sensitive, that they will not bear the least handling, unless enclosed in sheets, without curling and shrivelling; an attempt to transfer them from one drier to another, unless enclosed, only resolves them into tangled confusion. The specimens should be left in these papers through all changes of driers until thoroughly cured, and it is a good plan to let them remain in these sheets even afterwards until wanted for mounting or for exchanging. The specimens, by so remaining, are kept in much finer condition than by taking them out and huddling together in other papers. Besides, it saves time in transferring, an important item during a busy collecting season.

In getting ready for a tramp it is a good idea to put several driers into the portfolio with specimen paper. It is not necessary to have a drier between every paper as some young collectors think—in fact, for a trip of a day, or two or three days even, the plants keep fresher by having sheets with specimens next each other than with driers interposed. Only a few driers are desirable, interposed to keep thick and stubborn plants from making the pile too uneven when putting into the portfolio.

Digging.

For digging up roots, bulbs, &c., I have used nothing better than a small triangular trowel. Its blade is about 5 in. or 6 in. long, sharp-pointed, and known, I believe, as the masons' smaller pointing trowel. Be careful to select one strong and stiff. Perhaps one fully as good, if not better, is the one known as the Webb botanical trowel. It is made from a large triangular file, to which a curvature of nearly 1 in. of point part can be given by a blacksmith. The teeth should be ground off, and a handle fitted. A leather case to carry either of the foregoing trowels would be found convenient and probably save from annoying losses. Always carry a knife. Part of one edge of the first trowel can be ground sharp for cutting, but it is much better to have a strong pocket-knife with you. It is well to be provided with a good lens on an excursion. It will be found very useful, if not necessary, in collecting specimens of many of the more difficult and recondite families, where the distinctive characteristics of the species are minute and often obscure, as in the Sedges, Grasses, Mosses, &c. The Excelsior, Gray's, or Coddington Lens all answer a very good purpose for field work. Last, but not least, be sure to take a note-book with you on the excursion. This I regard as one of the most important requisites of the trip. Habitats of rare plants, with many valuable observations, may be noted down in the field, which may be afterwards of deep personal, and, possibly, public interest, and which would be often entirely lost if left to unreliable memory.

Whether it be a good plan on an ordinary occasion to cumber himself with a descriptive botanical work, I leave to the collector to determine. Some botanists always carry one. In new or remote regions there are times when it might prove serviceable; but on an ordinary trip it hardly pays. It adds too much unnecessary weight, while a good botanist will probably recognise all the plants he encounters, even if there be some new to him. When it is desirable to take a luncheon along, and not convenient to carry it in the small box, it is better to provide a small haversack made of light enamelled cloth and carried on the back. It weighs only 2 oz. or 3 oz., comes handy for various purposes, and is preferable to adding an extra compartment to the box, as this addition, I have found, adds more in weight than utility. A good, stout, easy-fitting pair of boots or shoes should be worn on a long tramp. They should have thick, broad soles, broader than the foot, and low, wide heels, for easy walking. Good walking shoes are excellent for fields and mountain climbing, but as many of our rarest plants are to be found in swamps, marshes, and low, wet grounds, boots, perhaps, on the whole, are preferable to shoes for botanising, unless one is willing to follow the example of an enthusiastic botanical friend, who, in traversing some deep miry swamps, in company with the writer, would deliberately pull off his shoes as he came to each swamp, and explore the batrachian wilderness barefooted. Rubber boots, except for a limited period in marshes or swamps, should not be worn; they soon become unendurable to the wearer, and early put him out of order. Light, loose-fitting clothes will be found most comfortable. For a trip of several days or longer flannel shirts are to be recommended—blue or grey is preferable. For alpine botanising, where the air is often exceedingly chilly, a warmer dress is necessary. Finally, ere concluding these notes on the outfit, let the young collector be cautioned against carrying too heavy a burden on setting out on an expedition. It is a temptation into which young botanists are inclined to fall. In the morning, in his freshness and vigour, the load will probably not seem over heavy, but after some hours' tramping through tangled swamps, sinking morasses, and over dipping bogs, its oppressive weight will be painfully recognised. Rather than carry a very heavy box all day, it is better to bring in the surplus specimens wrapped in Osmundas and the bundle tied with Grasses. I have frequently done this; the bundle being slightly moistened, the most delicate plants can be kept as fresh as in the box.—"Bulletin of Torrey Club."

LANDSCAPE GARDENING.

THE following questions given to students of landscape gardening are a fitting illustration of the ideas on landscape gardening that have hitherto obtained. With such, no wonder gardens are everywhere spoiled instead of improved by so-called designs.

> What are picturesque objects, and where are they appropriate on a place?
> How can you show originality without avoiding good taste?
> Where are suitable places on a lawn for single trees or for groups?
> Define richness and polish.
> What is gradation? appropriation?

With such meaningless drivel on the part of examiners, what can we expect from the unfortunate students? or any of them who made a straightforward effort to get at the bottom of these problems? We are told that madhouses are growing larger, and really it is not to be wondered at in the face of the questions asked of young men now-a-days.

R.

Adiantum caudatum.—This is one of the best of Ferns for baskets. Its fronds, which grow in a gracefully drooping manner to a length of 2 ft. or 3 ft., emit young-rooted plants, which also produce long fronds. In baskets or in pots, or planted to cover walls of stoves or in any warm greenhouse, this Adiantum will, when well known, be highly prized. It is not yet sent out, but Mr. Wills has a large stock of it in his Fulham nurseries—S.

PLATE CXXXVIII.

PERENNIAL LARKSPURS.

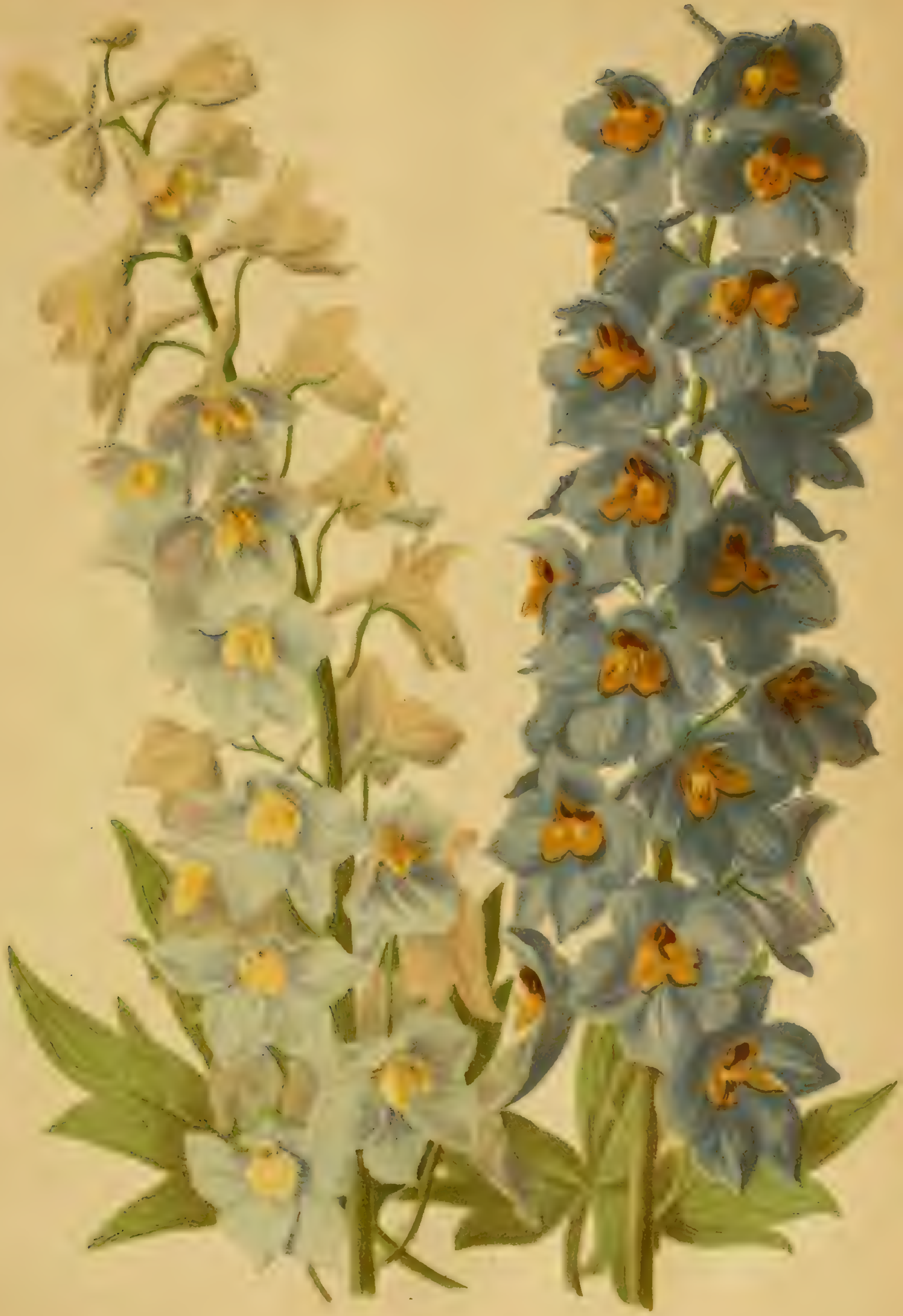
Drawn by MARIAN CHASE.

FEW families of hardy plants have undergone so great a change as the Delphiniums or Larkspurs. Our forefathers cultivated a number of them, some of which are still appreciated and eagerly sought after by lovers of hardy plants, but the greater number of old kinds are useless for decorative purposes, being wholly eclipsed by the lovely varieties recently obtained by means of hybridisation. For decorative purposes these stand pre-eminent, their bold, stately spikes and ample foliage rendering them conspicuous even at a distance. For mixed borders they are indispensable, and some of them are almost perpetual flowerers. It may not be generally known that Delphiniums can be made to bloom for several months by continually cutting off the spikes immediately they have done flowering. If the central spike be removed the lateral shoots will flower, and by thus persevering in cutting off the old flowers fresh shoots will issue from the base and keep up a succession of bloom. Another plan is to let the shoots remain intact until all have nearly done flowering, and then cut the entire plant down to the ground, when in about three weeks or so there will be a fresh display. In order, however, to keep the plants from becoming exhausted they must have a heavy dressing of manure or a liberal supply of manure water. Top-dressings are necessary not only in the case of Delphiniums, but in that of all plants of like character, such as Phloxes, Hollyhocks, Chrysanthemums, and the tall-growing Lobelias. They keep the soil cool and moist, give the plants a healthier appearance, and wonderfully increase the quantity and improve the quality of the flowers. Larkspurs thrive in almost any situation or soil; they are easily increased, and are quite hardy. A good friable loam, enriched with rotten manure, is their favourite compost, but the character of the soil apparently is of but little importance, as I have seen them growing luxuriantly in hot, sandy soil, which was, however, heavily manured and watered, whereas loam requires less attention in that way. Every three or four years they should be re-planted, dividing them at the same time. This operation may be performed in spring, just as they are started into growth, or in summer; if done in summer, cut the plants down that are intended for division, and let them remain for a week or ten days until they start afresh; then carefully divide and re-plant, shading and watering until they have become established. I dislike late autumn division in the case of Larkspurs.

Some of the best varieties are Delphinium cashmerianum and its white variety, a kind dwarf in habit and free flowering; D. laxiflorum is somewhat similar; D. grandiflorum and its double form (once common, but now scarcely ever seen) are both excellent; D. chinense, the Chinese form of D. grandiflorum, is a little-known plant, but one that I can strongly recommend; it is exceedingly free flowering, the blooms are large and of every shade of white and blue; in habit it is dwarf and neat, and it lasts in good condition for a considerable time. D. cardinale and D. nudicaule, two Californian species with scarlet flowers, are too well known to need description, and the same remark applies to D. elatum, elegans, and formosum, all good sorts. The following small selection will, I think, be sure to please everybody:—

SINGLE VARIETIES.—Belladonna, sky blue; Hendersoni, dark sky blue; Cambridge, sky blue with black centre; Granville, flowers large, deep indigo blue with brownish centre; Gloire de St. Maude, light blue with a brown and black centre; Barlowi versicolor, semi-double, deep Prussian blue tinted with red, centre brown, habit dwarf; Coronet, dark blue, centre purple and yellow, very profuse flowering; magnificum, gentian blue, centre white; Lavender, light blue; pulchrum, silvery grey, very free flowering, a fine bedding variety; formosum lilacinum, lavender tipped with pink, centre white; Celestial, ultramarine blue, centre brown, extra fine.

DOUBLE VARIETIES.—Madame E. Geny, rosy purple tipped with blue, centre white; Madame Henri Jacotot, bright azure blue, shaded with rosy pink; Madame Richalet, rich cobalt blue tipped and striped with violet; Pompon Brilliant, deep violet



TWO DELPHINIUMS

blue, centre reddish; Roi Leopold, blue and violet, centre white and yellow; Hermann Stenger, bright violet-blue, centre rosy purple; Claire Courant, azure blue; George Taylor, bright blue, centre purple; ranunculoides, rosy lilac, margin of petals deep cobalt blue, very double; Roncevaux, rich cobalt blue, with a metallic lustre, centre white; Le XIXe. Siècle, violet and sky blue, very double; Keteleeri, rich lavender blue tinted with reddish lilac, centre white; Prince of Wales, bright azure blue, centre white; General Ulrich, dark glossy blue, each petal having a central stripe of rich lilac; Arc en Ciel, silvery grey suffused with blue, centre white. P.

[The specimens from which our plate was prepared were supplied from the Hale Farm Nurseries, Tottenham.]

PROPAGATING.

Eupatoriums.—These are readily increased by means of cuttings, either in the shape of young tops on eyes as shown in [fig. 1 (E. riparium), or as seen in fig. 2 (E. gracile). The plants for stock must be got into an intermediate house in order to induce them to make shoots fit for cuttings. They should be inserted in pots filled with sandy soil, consisting of peat and loam, and the pots should be plunged in a gentle bottom-heat in the cutting box, where they will emit roots in about ten days. They should be occasionally sprinkled with a fine-rosed pot, and the glasses that cover them should be taken off for an hour every morning. The best month in which to propagate them is April, as they will then make fine plants for early winter flowering. H. H.

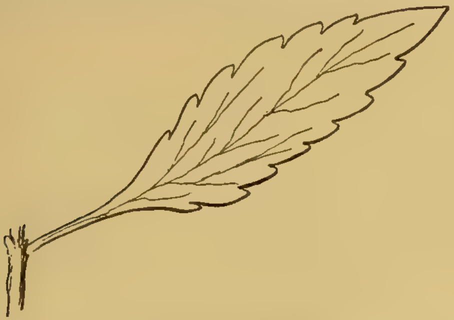


Fig. 1.—Eupatorium riparium.

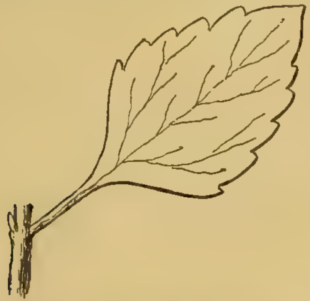


Fig. 2.—Eupatorium gracile.

Selaginella apoda.—This is the most compact growing of all the Selaginellas, but it is one which is not so easily grown in perfection as some other sorts. An essential point as regards its culture is plenty of heat, for although too much moisture can scarcely be given it, yet directly the temperature becomes low the plants damp off. It does best in a partly-shaded place, and, if grown in well-drained pans filled with turfy loam, peat, leaf-mould, and silver sand, fine compact, cushion-like plants will be obtained —S.

Eragrostis elegans in Pots.—In addition to the many uses to which this beautiful light feathery Grass may be put in a cut state, I find that it is now largely employed in Covent Garden as a decorative plant in 4½-in. pots. When sown and treated in the same way as Mignonette it has a very pretty effect amongst flowering and fine-foliaged plants, and during the summer months, when Ferns suffer from the exposure to which they are often subjected, such plants as these are very useful.—J. Groom.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Cattleya crispa.—The different varieties of this Cattleya, which are essentially late summer-flowering plants, do not find so much favour with Orchid growers generally as they deserve, principally, I believe, through their being comparatively shy bloomers. This is, however, in most cases traceable to their receiving treatment not in accordance with their wants. I have seen large specimens of these that have been grown on for a number of years without their showing any inclination to flower, through being placed, whilst making their growth, in a position where they had insufficient light and too little air; and although the bulbs and leaves so produced were large enough, they lacked the sturdy, robust character which the plant assumes when treated as it requires. Such plants when subjected for a single season to more light and air will usually flower freely from every growth which they make. The contrast between the chaste white ground colour of the sepals and petals, and the dark chocolate, blotched, crisp-edged lip, combines to give them a charm unsurpassed by any other species of this grand family of Orchids. After being rested through the spring and early part of summer, the flower-spikes of the different varieties of this Cattleya will now be pushing up inside their capacious sheaths. They will last considerably longer in bloom if, during this stage of their development, they are placed in a late Vinery or in any similar structure where a little more warmth exists than that of an ordinary greenhouse, but with more air and less moisture in the atmosphere than is given to any Orchid house. C. crispa and its varieties will stand more water at the roots than most Cattleyas, and just as much root-moisture should be given as will help the pseudo-bulbs to become plump after the slight shrivelling that will have occurred during the long drying process that this Cattleya needs through the spring to prevent its keeping growing both summer and winter, and enable it to flower.

Autumn and winter-flowering Cattleyas, such as the old true C. labiata, and the paler-coloured forms of this fine species, the hybrid C. exoniensis, and also the numerous varieties of C. Trianæ, will now have made considerable progress in their growth, and through the whole of the next month the house in which they are grown should be kept at the maximum temperature which these plants will endure. If the weather comes dull and cold, as is frequently the case during our changeable summers, the requisite temperature ought to be kept up by the use of fire-heat, for it must be borne in mind that our summers being comparatively short there should be no loss of time, such as occurs through the occasional low temperatures we experience during the summer months, and which have a corresponding influence upon the internal temperatures of all glass structures, necessitating the deficiency being made up by fire-heat, without which, during these cool intervals, little progress is made; and the evil is not confined to the loss of time alone; on the contrary, when the heat falls too low, the plants receive a check that has a material influence in preventing their growths attaining the size which they would do where a regular temperature is maintained. Some growers of the cooler section of general stove plants allow the fires for some weeks in the middle of summer to go out altogether; but that I regard as a mistake, especially in the case of Orchids that need either a cool or high stove temperature. The later flowering Cattleyas, including the many forms of C. Mossiæ, C. Warneri, C. intermedia, C. amethystina, C. Skinneri, and C. bulbosa, though not so far advanced as the preceding, will now be making active growth, and should be encouraged by sufficient warmth and as much water at the roots as it is safe to give them; but even during this their most active season the material in which their roots are placed must never be kept so moist as is required by the majority of Orchids. There is no exaggeration in saying that four-fifths of the evils connected with the growth of Cattleyas arise from too much root moisture. Wherever Cattleyas are met with in better than ordinary condition it will be found that the plants increase rapidly in size by double breaks, and if examined it will invariably be apparent that they possess an abundance of roots; but although the family collectively may be said to be much more impatient of water than any other Orchids, except the nearly allied Lælias, their ability to bear and benefit by its freer application will almost always be found to be governed by the stout sturdy character of the growths consequent upon being grown with plenty of light. This is clearly shown by plants suspended near the roof, which flourish with double the amount of water applied that a similar example is able to take when in a position where less light will reach it, both plants being potted in material equally porous and the drainage alike efficient.

Lælias.—These need the same treatment as Cattleyas. The different handsome forms of L. elegans, L. purpurata, and L. Perrini are particularly like Cattleyas in their general requirements, the last named beautiful autumn-flowering species, both the large and smaller variety, well deserving a place in any collection, for though not so much esteemed as many of the more fashionable varieties of Orchids, yet their distinct, handsome, finely-coloured flowers and their time of blooming which is late in autumn when comparatively few Orchids are in flower, make them worthy of cultivation by all who value the general character of a plant more than mere fashion. L. Perrini will now be fast plumping up its bulbs, but there must be no attempt at reducing the limited quantity of root moisture which it needs. A good light position, especially in this stage of the growth, enables the plants to flower freely. Stout, strong, well-matured bulbs will produce three, four, or even five flowers to a single growth in place of the more usually seen couple of blooms from a scape. The late autumn-blooming L. anceps with its several beautiful varieties and Lælia autumnalis will now be in the midst of their growth, which should be encouraged by furnishing requisite heat and moisture. These more than most Orchids require a good light position; they do well on blocks hung up near the roof, and where grown in pots one of the lightest situations in the house should be given them. Grown under conditions that impart to the leaves an elongated, soft, flabby character, the plants, especially L. anceps, will not be likely to flower.—T. BAINES.

Pelargoniums that were placed in the open air to ripen their wood, as recently recommended, will now be in a fit state for heading down, an operation which should be done at once, as their ability to flower early next spring depends much upon the time at which they are cut down. No plant with its roots confined in a pot should ever have its head removed without first allowing the soil to get as dry as it will bear without injury; for when the leaves, which are its evaporating surface, are removed, it has not the power to throw off the moisture absorbed by the roots, a circumstance considerably aggravated if the soil be wet at the time when the plant is headed down, a condition which causes the roots inevitably to perish. Hence the necessity for allowing the soil to become dry, more or less, according to the nature of the plant to be operated upon before removing its top. It is necessary to be more careful in this matter in the case of Pelargoniums than in that of most plants, as they are more impatient of their roots being in soil that is too wet than the generality of plants in cultivation. After they are headed down place them in a cold pit or ordinary garden frame in a sunny situation, put the lights on, but tilt them in the daytime in order to admit air, closing them in the afternoon whilst the sun is on the glass, syringing them freely overhead at the same time, which will be all the water they will require until they have broken into growth afresh.

Fuchsias.—A portion of the plants that flowered earliest may now with advantage be placed for ten days or so in the open air, during which time they should receive only just enough water to prevent them from flagging. If after this their side branches are cut in to four or five joints, the leading shoot being shortened proportionately, and they are then put in a house or pit, where the atmosphere can be kept a little close and moist by freely damping the floor, closing the lights in good time in the afternoon, and syring overhead, they will quickly throw out fresh shoots that will bloom freely through the autumn; and to assist them to do that they should have weak manure water applied once or twice a week.

Cassia corymbosa is a plant that is easily managed, and will keep on producing its yellow blossoms from August to October. Young plants of it potted in spring, and well attended to since that time, will now be setting their flowers, and as these are produced from the extremites of the shoots, there must be no further stopping, except in the case of any that it is deemed more desirable to grow on than to permit to bloom. Keep them well up to the glass, so as to promote a bushy, compact growth.

Petunias.—These make excellent pot plants and are very showy, especially the flaked varieties, both single and double. To have them stocky and short jointed they should be grown out-of-doors, fully exposed to the sun, and be stopped frequently to induce them to break back freely and form bushy plants. When grown under glass the stems become drawn, which they likewise do in the greenhouse while producing their blooms. To obviate this as much as possible they should be placed in light airy positions, where they only get a small amount of shade, if any at all. By cutting back any that have become straggling and drawn, and replacing them out in the open air, they soon break again and flower with great freedom, so that a constant supply may be kept up by growing a few plants and treating them in this way. While out-of-doors the pots should be plunged so as to prevent the sun from drying the roots.

Celosias.—The brilliant and feathery plumes of these and the length of time during which they may be had in bloom render them very desirable plants to cultivate, either for the purpose of supplying cut flowers or for greenhouse or conservatory decoration, where for effect they have no equal among soft-wooded plants. Unfortunately, however, they are very subject to red spider, and, unless kept well syringed while growing and freely supplied with water at all times, they become so much injured as to lose their foliage entirely long before the flowers become shabby.

Double Zinnias.—There is generally a paucity of gay-blooming plants late in the autumn; and although Zinnias are not generally cultivated in pots, they are most valuable for that purpose, their gay colours and fine large globular flowers making quite a display indoors long after they cease blooming in open beds, where damp nights and heavy rains generally cut short their beauty. Any left over from planting should have their flower-buds nipped out and be potted up at once, after which set them in the shade for a few days till they get hold of the soil, and then out in an open situation. A few seeds sown now will not be too late, as they grow rapidly at this season and soon come into bloom.

Late-flowering Lilies of the lancifolium section will now have formed their flowers, and have filled their pots with roots. Where there are many bulbs in a pot the soil naturally becomes exhausted, and unless from this time onwards they are regularly supplied with manure water, the bottom leaves will turn yellow, and fall off long before the flowering is over, a circumstance which gives them an unsightly appearance. Where a number of these useful decorative plants are grown, their season of blooming may be much prolonged by placing a portion at the north side of a wall now, where they will not receive much sun. When the flowers are visible this will not have any effect upon drawing them up weakly, provided they are set where they will get plenty of light; keep them well tied out so as to admit light to the inside leaves. If aphides make their appearance upon them they should be immediately thoroughly syringed with Tobacco or Quassia water, laying them down on their sides for the purpose, for if the aphides be allowed to remain on them, they will destroy the leaves in a very short time. One of the first essentials of successful Lily culture is to maintain the leaves in a healthy state as long as possible. The number of flowers produced by pot Lilies is generally not more than half the quantity which they would bear were the treatment such as they require.

Flower Garden.

At this season of the year trees and shrubs grow so rapidly that the more common and robust kinds are likely to encroach upon their weaker, although sometimes more valuable, neighbours; and this very often causes serious injury before it is observed. Strong shoots are also sometimes produced by the stocks upon which choice varieties have been budded or grafted, and these should be removed at once. It sometimes happens that trees and shrubs produce abnormal growths, or sports of various kinds, such as variegated shoots, flowers of a distinct or different colour, &c.; and these, if they are considered sufficiently valuable, may be perpetuated by being budded upon other representatives of the family. Where alterations in grounds and gardens are contemplated the present is the most suitable time for making notes and observations having reference to these changes, as all trees, &c., have now attained to a mature condition, as regards the hue or colour of their foliage, their habit of growth, &c.; and such notes made now will probably be found to be very useful at a later period of the season, when such alterations are being carried out. In selecting trees and shrubs it is neccesary to take into consideration their habit of growth and the form they are likely to assume when they are fully developed, and whether they will be of an upright or drooping habit, or of a round-headed or pyramidal form &c.; and, with a view to secure the desired effect in grouping or arrangement, the hue and form of leaf should also have attention given them. There is also another very important point which should not be lost sight of, viz., that of selecting plants that are likely to thrive in the soil and situation where it is intended they should be planted. In the case of newly introduced species this can only be ascertained by experiment, and this will generally be upon a somewhat limited scale. But it would, doubtless, be unwise to form extensive plantations of Rhododendrons and other American plants upon a soil resting upon a chalk formation, or to plant freely such Coniferous trees as the Abies canadensis, Menziesi, and Douglasi, upon a light dry soil. Attend to the usual routine operations of mowing, sweeping, rolling, weeding, &c., the frequent falls of rain having been exceedingly favourable to the growth of weeds of all kinds. Attend also to staking and tying up tall-growing plants, as well as to training and regulating dwarf or trailing species.

Many annual flowers, such as Nemophilas, Clarkias, and many other species, although exceedingly beautiful while in bloom, are yet of short duration, even during favourable seasons, and, of course, more so during such seasons as the present. They should (if the seed is not required) be cleared off as soon as their beauty is over, and be immediately replaced by some other species of plants from the reserve garden. Attend to the various sorts of plants in the flower-beds, as regards training, pegging down, watering, &c., and regulate the growth of standard and pyramidal specimens of Fuchsias, Pelargoniums, Tropæolums, Clematises, &c., while drooping plants in baskets and vases will also require to be occasionally regulated and trained, so as to be made to depend gracefully over the sides, and around the margins of the same. Plants suitable for this purpose are the various sorts of Ivy-leaved Pelargoniums, Clematises, Convolvulus, Maurandias, Lophospermums, and many others. Biennials and perennials raised from seed sown during the spring must on no account be allowed to stand too close on the beds, for if crowded thr whole get drawn up weakly, and a season is so far lost that they flowee only meagrely the ensuing spring and summer. In preparing nursery beds for those that do not absolutely require a shaded situation select an open position where they will make close compact growth, which will enable them to stand the winter and produce double the quantity of flowers that can be obtained from weakly-grown examples. Those that do not like full exposure to the sun, as, for instance, Primroses and Polyanthuses, should have a place at the north side of a wall, not, as they are often seen, crammed away under the shade of trees that not only darken them too much, but impoverish the soil to an extent that prevents them attaining anything like the necessary strength and vigour. In the herbaceous borders stake and tie everything that requires it before it is broken down by the wind, especially tall-growing subjects like Hollyhocks. These fine plants are often thrust at the extreme back of a border close up to shrubs or trees where there is no possibility of their ever being more than mere shadows of what they would grow to if justice were done to them; in such places the bottom leaves are usually all destroyed by red spider before their flowering is half over. Mulching with 3 in. of rotten manure over the roots will greatly assist them, and a free use of the syringe with clean water twice a week, taking care to moisten the roots as well, will much improve their health and appearance. Remove all dead and decaying tops from plants that have flowered early in order to reduce to a minimum the greatest drawback to herbaceous plants; but for the sake of mere appearance never remove the healthy tops from any plant, or the never-failing result of such treatment will be to weaken it seriously, and perhaps irrecoverably.

Indoor Fruit Department.

Vines.—Late varieties will now require to have their young growths pinched frequently, as it is better to go over them often than allow the wood to grow for a number of feet and then remove it. Gros Colman, after being stopped the first time, never afterwards makes many young growths. The leaves of this variety are very liable to become shrivelled in autumn before the fruit is quite ripe; therefore, in order to have the foliage fresh as long as possible, the lateral growths should be left three or four leaves in length. Every opportunity must now be taken to encourage the development of late Grapes, as one month of bright summer weather, properly utilised, is of more benefit than two later in the season. Grapes being now frequently transferred from one place to another, packing ought to receive careful attention. Grapes are, however, not so easily injured by travelling as some fruits, but the bloom is apt to get rubbed, and without bloom the appearance of the fruit is deteriorated. Single bunches or a few pounds should be wrapped up in tissue paper and placed in a box made of ½-in. deal, as near the size of the quantity it is destined to contain as possible. A layer of paper shavings should be laid along the bottom, and, as each bunch is placed in the box, a small quantity of the shavings should be placed between it and the next bunch, enough of the same material being laid over the top of the whole before putting on the lid as will prevent any of the bunches from getting displaced. Screws should be used for fastening down the lid, as they can be put in and taken out without shaking the box or splitting the wood. Baskets with close-shutting lids may be, and often are, used; but they are not so secure as the wooden boxes. When large quantities are being packed no wrapping or stuffing between the bunches is necessary. If a lining of paper shavings be placed round the box or basket, and the bunches are laid closely against each other, they will travel a long distance and stand much knocking about without being in any way injured. This is the safest, easiest, and cheapest way of packing large quantities of Grapes.

Pines.—Large suckers, which were rooted a month or two ago may now be shifted into their fruiting pots. They will make considerable growth before the end of the season, and, at the latest, will be in fruit by this time next year. Treat them as plants with no roots for a week or two after potting. As plants from which the fruit has been cut are thrown away, space will be made to admit of thinning out and re-arranging the young stock of fruiting Queens. The best plants generally are those which are grown far enough apart to prevent leaves from intertwining. Continue to pot suckers as they become fit for separation from the parent plants.

Hardy Fruit.

Peaches and Nectarines.—These should be gone over as often as they require it, removing all superabundant and ill-placed shoots. Take care, however, to destroy none that will be required for bearing next year. Want of observation and forethought in this matter is the cause of so many of these trees being deficient in the way of bearing wood in the centre, the fruit being borne almost exclusively near the extremities of the branches, instead of being evenly distributed over the whole surface. Such shoots as are to be retained should now be all laid in close to the wall, an operation especially necessary in late localities, where there is a difficulty in getting the wood ripened over each tree; moreover, now and then, to see that the fruit is fully exposed to the sun, and where any symptoms of mildew, either on the leaves or fruit, show themselves dust the tree, or at all events the affected parts, with flowers of sulphur, by means of the old-fashioned sulphur-puff, a contrivance as yet unsurpassed for the purpose. It is so simple in its construction that it cannot get out of order, and by its use the sulphur can be directed to any part where necessary, both to the upper and under surfaces of the leaves. Let the sulphur remain undisturbed four or five days before it is syringed off. Mildew is making its appearance upon Peaches later than usual. Be assiduous in regularly syringing with water, and also in giving a copious supply to the roots; this is not only necessary to enable the fruit to attain its full size, but also to prepare good wood for another season. Where, in the early part of summer, trees are allowed to suffer from want of water the growth gets stopped before its time, and when copious rains come during August these have the effect of causing them to push fresh growth, for the ripening of which there is neither sun nor time. I have no hesitation in saying that half the failures that occur in the cultivation of Peaches and Nectarines, particularly in small gardens, are due to the trees not receiving sufficient attention. With the exception of pruning and nailing, they are, comparatively speaking, often left to take their chance, or they are subjected to a course of alternate care and neglect, which results in a crop of fruit being obtained in such seasons as it is to be met with everywhere, but none at other times. There is also an immense difference in the size and quality of fruit borne by trees that receive the requisite attention as compared with that produced by those existing under neglected conditions.

Apricots.—These should also have sufficient young shoots nailed or tied in close to the wall to supply bearing wood evenly over the whole surface. These young shoots, when in absolute contact with the wall, will frequently set a crop of fruit when that upon spurs, which stand further away, is destroyed by spring frosts. The difference that 2 in. make in such matters would scarcely be credited by those who have not had an opportunity or taken the trouble to compare the results.

Kitchen Garden.

Drying Herbs.—Herbs should be gathered as soon as they begin to open their flowers. In drying them two methods are employed. One is to tie them into bunches as soon as cut and hang them up in a room or shed; the other is to first lay them out in the sun to dry. By both these methods the quality is deteriorated. If fermentation takes place sufficient to discolor the leaves—such as occurs, more or less, when herbs are tied up in bunches whilst green and sappy—their best properties are destroyed. In confirmation of this it is only necessary to point to the extreme care taken by the growers of Lavender, Mint, &c., for distilling; for such purposes they are not allowed to lie together, even for a few hours. If, on the other hand, herbs be exposed to the sun, much of their strength is dissipated; they become quite brown, and that fresh green appearance which they possess when the drying is well managed is destroyed. But when herbs have been improperly treated, loss of strength is not the worst result; there is always imparted to them a disagreeable flavour. In drying herbs an open shed or room, where plenty of air can be given, is necessary. Stretch out a piece of netting, such as is used for protecting fruit from birds, wire netting if at hand will do; on this lay the herbs (which should be cut when quite dry) thinly. Thus treated, air acts upon them from all sides and they dry quickly, which is the primary object, without losing their best properties. When perfectly dry put them loosely in white paper bags, tie them up, and hang them where they will be free from damp or they will become mouldy. Herbs treated in this way will be found to be but little inferior to such as are fresh cut. Sage should now be propagated by slips, taking off middling-sized branches and inserting them moderately deep in the ground in rows where they are to be grown. If the weather becomes dry give them plenty of water until they are rooted. The advantage of growing Sage from slips or cuttings is that plants so produced have not such a disposition to flower as those raised from seed.

Tomatoes on Open Walls.—The naturally vigorous habit of these plants is such that they usually grow too rank if they receive over much moisture at the roots, but in exceedingly dry weather they must be regularly supplied with water, or the fruit will neither swell to the requisite size, nor will the plants continue growing. Do not allow them to get too much crowded with superabundant shoots or to hang loosely from the wall, or the progress will be slow. If they be kept regularly and evenly trained so that the sun, of which they are so fond, can reach every part, our summers are not too long for the successful cultivation of Tomatoes, particularly in late seasons, and if ever they suffer through inattention they lose time that cannot be regained.

Extracts from my Diary.

July 29.—Sowing Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbage; also Frazer's Broad-leaved and Green Curled Endive on a border previously well watered. Planting out the last rows of Celery in trenches, in which has been put a good supply of well-rotted manure, to which had previously been added soot and salt at the rate of 25 lb. of the former, and 1 bushel of the latter to the load. Preparing three-light frames and planting them with Cucumbers. Putting Jargonelle Pears in gauze bags to protect them from wasps, &c. Nailing and tying in leading shoots of Peaches and Nectarines. Tying out and picking blooms off Fuchsias intended for exhibition at the end of August. Picking over borders of carpet bedding. Taking lights off early Peach house and well watering the borders. Layering Strawberry runners in pieces of turf 4 in. square which have previously been soaked in manure water.

July 30.—Sowing Black-seeded Brown Cos, and All the Year Round Lettuce, Red and White Turnip Radish, and a large border of Early Horn Carrots for autumn use. Potting a large batch of Primulas and Cinerarias for supplying cut flowers. Taking up and storing away Shallots and Garlic in a cool shed. Earthing up Celery whilst it is perfectly dry. Turning a large heap of manure for Mushroom bed. Stopping laterals through all Vineries where the fruit is ripening. Hoeing, cleaning, and watering amongst late Peas. Taking up a border of Early Ashleaf Kidney Potatoes and laying them in the sun to get green for seed. Watering Celery and Cauliflowers. Commenced summer pruning of Apples and Pears.

July 31.—Sowing Turnips. Putting in a few Pelargonium cuttings. Staking Chrysanthemums. Tying out Tricolor Pelargoniums for exhibition. Pruning and nailing Plum trees. Clearing off a large piece of Peas and digging the ground for other crops. Pulling up pickling Onions and laying them out to dry. Stopping and nailing the shoots of Tomatoes on walls. Giving the late Vineries a good soaking of guano water. Watering the Pines all through; also Celery, Broccoli, Lettuce, and Endive.

August 1.—Sowing Mignonette in pots; also Telegraph Cucumbers. Planting two three-light pits with Parsley for winter use. Renovating linings round all Melon and Cucumber frames. Digging large pieces of ground (previously occupied by Peas) for Cabbages. Gathering Apricots and Gooseberries for preserving. Earthing up Cardoons and Celery. Dutch hoeing amongst Gooseberries and Currants. Giving carpet bedding and other borders a good soaking of water.

Aug. 2.—Sowing large piece of Spinach; also in a pit Osborn's Early Forcing Bean to succeed the outdoor crops. Planting out Wheeler's Imperial and Carters' Heartwell Early Marrow Cabbage on ground previously occupied by Peas, and well watering them. Re-potting batch of Ferns and Dracænas for dinner-table. Cutting last few bunches of Black Hamburgh Grapes, and putting their stalks in bottles of water so that the house may be thrown open in order to ripen the wood. Spawning Mushroom bed at a declining temperature of 80°. Earthing up Leeks, thinning Turnips and Spinach, gathering Tomatoes from plants grown in pots in Pine houses. Watering outdoor Tomatoes, late-planted Celery, Carrots, and Radishes.

Aug. 3.—Sowing a bed of Early White Naples Onions for use in spring. Pulling up one portion of spring-sown Onions to dry. Weeding and cleaning Box edging in kitchen garden. Rolling gravel walks after rain. Gathering Gherkins, Cucumbers, Cauliflower, Onions, &c, for mixed pickles. Clearing off large piece of Raspberry canes; also a piece of Broad and Dwarf Beans. Putting together six cartloads of manure, adding 20 lb. of salt and one bushel of soot to the load, and giving the whole a good turning for Celery trenches. Watering Peach house; also Cabbage plants, Lettuce, Endive, and Scarlet Runner Beans. Fruit in use for dessert: Pines, Melons, Grapes, Peaches, Nectarines, Apricots, Figs, Plums, Gooseberries, and Currants.—W. G. P., *Dorset.*

THE FLOWER GARDEN.

FORMAL FLOWER GARDENING.

Is it true, as some professed authorities would have us believe, that certain formal styles of mansion architecture commit us to a formal style of gardening also? Does a square and evenly-balanced, castellated structure, for example, with its stairs and terraces, commit one to a geometrically-shaped flower garden in front of it, in which all the beds are laid out with geometrical order and balance, and planted in the same way? or does a Grecian frontage entail a classical style of garden and formality as well, with the usual fountains, vases, and other adjuncts? Would it be an incongruity to place a mansion, in any style of architecture, down at once upon a Grassy lawn among trees, shrubs, and flowers, laid out without the least regard to formality, but becoming and natural? Would such an arrangement offend good taste? or would it violate any rule or principle in landscape gardening? and would it be incompatible with any particular style of architecture? I ask these questions because it has been not unfrequently stated that the style of the mansion determines, to a great extent, the style and character of the flower garden, and there are not a few who believe as much, as is testified by many a garden in England, to see how much landscape gardeners are fettered by such rules we have only to read their treatises on the subject. One of the most recent writers on landscape gardening, who has published a book on the subject, cannot apparently conceive a garden in front of a mansion in any direction without geometrical parterres in front of the windows, and his diagrams, which are furnished to show the "application of the principle of unity and breadth to garden compositions," betray the same rigid artificialism. Examples of this unity and breadth are represented by a proportionately balanced structure (a square two-storey house) with a square plot of Grass in front, bounded by straight walks and straight lines of trees on each side, and a variation of this design consists of a larger, or rather a longer, house with the same plot of Grass in front and the same straight lines of walks and trees, except that the Grass plot is divided into four plots with the inevitable fountain in the centre surrounded by a gravel walk. Nowhere is the "principle of unity and breadth" exemplified by a free and natural style of embellishment, and the impression left on the mind by the author's statements is, that unity without geometrical uniformity is an impossibility. Fortunately, we are not left to books alone for lessons in landscape gardening. Here and there a venturous mind has broken loose from leading-strings and stepped out in an independent path of its own. As an example of what may be called the natural style we may mention Wentworth House, the princely seat of Earl Fitzwilliam, in Yorkshire. The house is a magnificent Grecian mansion, consisting of a centre and two wings extending above 600 ft. in length. The front of the mansion faces one of the finest park scenes in England. This consists of a wide expanse of open park with undulating masses of woodland to the right, left, and beyond, and distant glimpses here and there between. Deer are abundant, and stroll about familiarly close to the windows of the mansion, which we have seen them approach to take crumbs from the hands of the domestics. On the pleasure ground front the style is nearly the same, except that the grounds are kept in perfect order. There is first a roomy gravel space in front of the house, and beyond a wide and open extent of smooth lawn with one or two clumps of shrubs and trees, but not many, and ending in the natural wood beyond. Near the house, at the edge of the gravel, there are two or three narrow flower beds and a good vase or two, but there are no pretensions to a flower garden whatever. A carriage drive runs straight from the entrance for some distance, and has on each side a broad margin of lawn overhung by noble Beeches and other trees, but not planted in formal lines. They form just the edge of the wood, and there is also a kind of wild garden on each side of the drive. The general aspect of the scene is free and natural, and without a single formal line anywhere, except it be the drive. There is no lack of either unity, or breadth, or repose. We do not say that a flower garden might not have been made in the same situation, or that it would have been a mistake, for we are not condemning flower gardens, but the example as it stands shows us, as well as anything could do, that a geometrically laid out flower garden is not a necessary adjunct to a mansion, let the style of the latter be what it may.

J. S. W.

HERBACEOUS PLANTS AT HUNTINGDON.

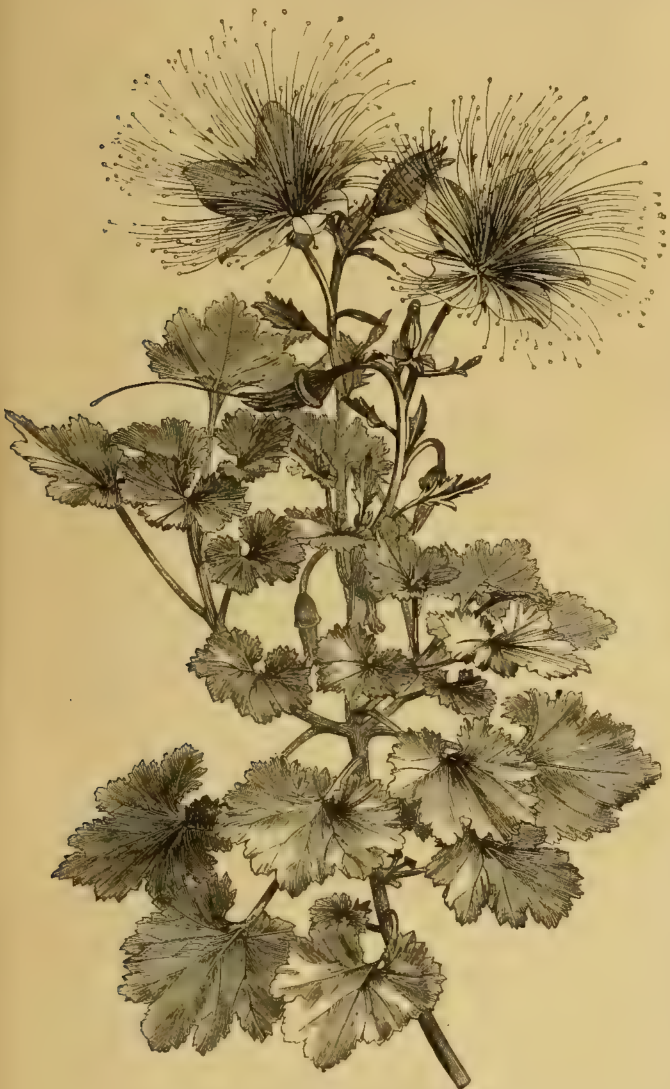
I know of nothing so well calculated to excite enthusiasm on behalf of hardy herbaceous plants as an occasional visit to a good nursery where this department is well cared for. Those whose knowledge of flowers is mainly confined to the common run of bedding plants have no idea what a mine of floral wealth there is carefully stored up and cherished in some of the old-established country nurseries in hardy plants alone, and what facilities such plants offer for the supply of cut flowers. One may be in the possession of an acre of flowers bedded out and yet be unable to fill a vase tastefully and well from a sheer lack of materials. Can anything be more lovely for cutting for vases at this season than the Delphiniums? and what a striking effect they produce in the borders when growing! A variety called Cambridge—from its shade of colour being just the Cambridge University tint—is especially striking; so also is the double variety ranunculifolium and the dwarf scarlet kind nudicaule. It cannot be known how very effective these plants are, or we should see them in every garden. Pyrethrums have been good, but are now nearly over, so far, at least, as regards the principal bloom; but, like Roses, with a good collection there will nearly always in summer and autumn be a few flowers. The early Phloxes are just showing colour; and what an interesting sight is a good collection of Carnations, Picotees, and Pinks! One need not be a skilled florist to enjoy such flowers, and they are eminently suited for town gardens, being pretty well proof against smoke; at least, I have seen prize stands cut from a crowded city garden. Depend upon it, if we really wish to find pleasure in the culture of flowers we must seek for it among those families of plants that have been too long comparatively neglected. How lovely are the Ranunculus flowers where they do well! but how disappointing they often are. The double Potentillas are now very showy; they have been much improved of late years and make excellent border plants, throwing up a succession of flowers for a long time. Among miscellaneous plants that are now in flower may be named Plagius grandiflorus, a North African plant, quite hardy, bearing large, striking yellow flowers on solitary stalks. A bed of the old scarlet Lychnis is wonderfully bright and even more effective than the double-flowered form. Scabiosa speciosa is pretty, and so are Gladiolus Colvillei rubrus and albus and the yellow-flowered Siberian Poppy (Papaver nudicaule). A bed of the white Dianthus Marie Parc is now very effective, and, as is the case with all good collections of herbaceous plants, some are going off flower while others are coming on; therefore, the interest never flags. E. Hobday.

Ramsey Abbey.

Dwarf Lilies for Flower Beds.—A quantity of plants of the White Trumpet Lily (Lilium eximium) now flowering in Mr. Bull's nursery at Chelsea suggests the idea that where it is desirable to keep flower-beds gay throughout the year such plants might be made to play an important part. Single bulbs placed in small pots filled with good sandy loam and rotted cow manure, and plunged in a cold frame or in a sheltered position out-of-doors, could easily be moved into flower-beds when coming into bloom. They would be effective either in masses by themselves or plunged 12 in. or 18 in. apart in beds of Violas or other plants in flower in June and July. The plants alluded to in Mr. Bull's nursery have stems from 6 in. to 8 in. high, each surmounted by a large, pure white, trumpet-shaped Lily. L. longifolium, which is so largely grown for market, and which, at the present time, may be seen in such profusion in the flower shops in the Central Avenue, Covent Garden, differs little from L. eximium, but it grows rather taller and its flowers assume a more upright character.—S.

THE MICROSPERMAS.

Only two species of this genus are known, both being annuals and natives of Mexico. M. bartonioides is a very distinct and beautiful plant, which flowers freely through the summer months; it grows about 1 ft. high, and has rough, hairy stems and jagged leaves. Either for the open border, or for the decoration of the greenhouse or cool conservatory, it is certainly worth growing, the large sulphur-yellow petals, and the very numerous, long, slender filaments of the same colour making a fine show. It succeeds best as a pot plant because, when grown in open ground, the rather succulent stems are apt to suffer damage from wind or heavy rain. In any case it requires to be treated as a tender annual, that is, to be raised in bottom-heat and gradually hardened off. M. lobata is a much less beautiful plant with smaller flowers. N.



Microsperma bartonioides.

Hardy Plants Costly.—Now, when something like an earnest attempt is being made to introduce a class of plants into our gardens which when once planted will be able to take care of themselves, it is to be hoped that their commercial value will not get above that of plants that have to be coddled under glass nearly all the year round. At present, as far as expense is concerned, one might furnish a large bed with Pelargoniums, Calceolarias, and similar soft-wooded plants at at least half the expense that would be needed for hardy Anemones, Aquilegias, Delphiniums, &c. That an increased demand will soon remedy the evil, by making the cultivation of hardy plants more general in nurseries, I have no doubt, but just now it is a considerable drawback to the extended culture of such plants that for only the very smallest piece with a root, that can by any stretch of imagination be called a plant, the same price is charged in the market that would procure a well-grown Pelargonium or other tender bedding plant.—James Groom.

FROM THE BIRTH TO THE DEATH OF THE LILY.

In my last paper (see p. 60) I brought the history of the Lily up to near the end of its first twelve months of existence, or to within a month of the flowering period of some of its species. On the 15th inst. I lifted and transplanted several clumps of L. bulbiferum, candidum, croceum, and Martagon, and in doing so I took occasion to dissect some of the bulbs. I first washed them thoroughly in a pail of water, divesting them of every particle of soil, so as to enable any one to distinguish distinctly between the scales of the old bulb and the scales of the new one, and also between the old and the new roots. I then took a bulb of L. candidum, and, as I knew that the new bulb would be found, sitting close beside the stem of the present year in a nidus or nest composed of the old scales, which were discoloured in various parts, I carefully picked off the scales until I uncovered the new bulb. On submitting the old scales to the microscope, it was clearly seen that the discolouration was caused by their already beginning to decay; the new bulb itself being, on the contrary, clear, white, and smooth, like a piece of polished ivory, with its scales firmly packed upon one another. I picked off twenty-five old scales before I cleared all away from the new bulb; the new roots, the core, and the old stem being alone left with it. This ought to teach those who are interested in settling this question not to judge by outward appearances, by mistaking the old bulb for the new bulb within it. When cleared of the old scales the new bulb measured 2 in. in diameter, and 2½ in. from base to apex—more than double the size of specimen No. 33 (see p. 61). I next cut down through the bulb near its centre, and thus laid open the central growth or rudiments of the new or next year's stem and leaves, which were clearly observable by using a common garden magnifier. The new roots at this time measured from 3 in. to 5 in. in length; and, in cutting down the bulb through the old core, I laid open the connection of these roots with the new bulb, so that they could be seen passing through the core in the clearest manner. I have been induced to be thus particular in my description, in order that those interested may be enabled in like manner to dissect any number of bulbs for their own satisfaction, this being the best time of the year for doing so. There are many readers, I am aware, who differ from me in opinion, but they are simply opinions, as I know well that, experiment as they may, they cannot prove by facts that I am wrong. If they will look at the specimens (see p. 61) they will see that, in every case, the new bulb is springing up from the very side of the old flower-stem, and as it grows larger and larger it pushes the old flower-stem on one side (this is an experimental fact), and, as it rises, it "shoots up from (almost) the precise centre of the bulb as previously." These are the words of one of my opponents, and he is quite correct so far, but he has not yet discovered that it is the new bulb that shoots up, and not anything connected with the decaying old bulb.

When to Re-plant Lilies.—One who has written various works on horticulture tells us how the Lily should be cultivated; but though he gives us a list of all the known Lilies he only treats on a few of the most common kinds. With respect to the first, namely, L. candidum (or the White Lily), he says: "When the stools of bulbs have become large, they will have exhausted the soil, and it will be advisable to take them up, divide them, then dig holes, taking away the old exhausted soil, and put at the bottom of each hole a shovelful of rotten manure; fill up with fresh earth, and plant immediately three strong bulbs in each hole, covering them about 3 in. deep. The best time to do this is in September, and the reason for planting immediately is because these bulbs will not bear exposure to the air without injury. By this treatment they will flower well the next season, but much finer the second." Now this is a mixture of good and bad advice; and although the bad predominates, it is, unfortunately for amateurs, to be found in almost every work on Lily culture. It is said, "by this treatment they will flower well the next season, but much finer the second." Why, the writer does not tell us; and this is the way with almost every one who writes on the Lily. They give us the result, because it is forced on their attention. They cannot give us the cause, for they do not know. In the first place bulbs are recommended to be lifted and re-planted in September. Now this is just two months after that operation should be done to be in the highest degree successful. The White Lily has done blooming early in July. In September its roots are in the most vigorous action. I have proved by facts that, in the beginning of May, the roots of the new bulb are 2 in. long; and now (July 15) they are from 3 in. to 5 in. long. What, then, must they be in length and quantity two months later? The removal of the bulbs in September destroys the vital and most useful parts of the roots by wrenching off the hair-like fibres, and the sap extracted from the bulbs for the formation of new rootlets would have served to increase the size of other parts. Besides, until the new root fibres are in full action, the bulb would be left without its natural support, and subject to a loss of strength. Then how is it possible that the first year after re-planting the bloom should be what it ought to be? Had the bulbs been lifted and re-planted soon after the parents had done blooming, this would not have happened. It may be said this is mere assertion. I grant that it looks so, but as my doctrine does not depend on anything like assertion, let me, as usual, explain. The roots increase their growth at their extremities only; these extremities are always fresh, and always furnished with permeable and soft cellular tissue. It is in the neighbourhood of these tender extremities that the absorption takes place of the liquid matters which are destined to penetrate into the interior of the plant. This absorption is facilitated and increased by means of fine elongated hair-like fibres attached to the younger portions of the roots; these root-hairs, as they are called, though sometimes discernible by the naked eye, may almost always be plainly shown by a moderate magnifying power, while a higher power distinctly reveals their nature, as prolongations of some of the superficial cells from a certain point into slender tubes, thus largely increasing the absorbing surface. Hence the danger—as I have said in my last paper—of disturbing the active roots during the season of growth. Lifting and re-planting is, in fact, even at the earliest period, work only for a very careful man. Then, what must it be two months later in the season? Not work, certainly, for a man who, from the manner in which he treats the roots, knows not whether a Lily has got root-hairs or even rootlets. It is agreed by writers on Lily culture that, as they are great feeders, the soil becomes exhausted in three or four years. It stands to reason, then, that in half that time the soil will be greatly deteriorated. And, further, it requires very little science to tell us that the first season is the only one that the Lily can have a sufficiency of fresh and sweet food; for though mulchings and liquid manure are excellent in their way, they cannot equal, by many degrees, good imitations of the Lily's native soil, supplied annually and early, that is, at the very time when the roots are beginning to feed freely. Mr. Groom has said that he agrees with me as regards the importance of transplanting Lilies annually; and he has further said that I would confer a boon on many cultivators if I would illustrate that neither directly nor indirectly is the succeeding year's flower-stem affected by cutting down the leaves while they are yet green. I venture to think that I have done so by bringing forward every proof that I could think of. And, in so doing, I trust I have given the very best reasons in favour of early lifting and re-planting. Last year I had some examples of L. testaceum left in the ground that had been doing very poorly; early in the season I took away from the clump two bulbs and planted them in a separate place, with a sufficiency of good food. This year they flowered ten days earlier and the flowers were really twice the size of those that had not been disturbed. Besides this, bulbs that are left in the ground for some years are very apt to produce deformed flowers, just as if they had not sufficient strength to open them fully and freely; and that is the truth. It is the same with offsets. If we desire to cultivate a progeny of offsets at the expense of the bloom, by all means leave the bulbs in the ground for some years undisturbed. Every offset on the side of a bulb is drawing the sap from that bulb which would otherwise have gone up the stem for the good of the flowers. And every offset on the roots, like little brigands, intercept and rob the best of the sap as it passes from the delicate rootlets up to the bulbs; and, moreover, the longer these offsets are allowed to grow and multiply undisturbed, the worse will it be for the main bulbs and the bloom. In such cases some people say, "My Lilies are doing very well, and I do not intend to disturb them." This is the old story—"letting well alone" until it is well no longer. The following is a case in point: "A. K.," of Eastcott Cottage, Pinner (see p. 62), informs us that four years ago he planted bulbs of L. excelsum and L. auratum, and that under the same treatment which he gave to L. excelsum—that is, allowing it to remain in an ordinary border perfectly undisturbed during the four years—L. auratum has entirely disappeared. This need surprise no one. L. excelsum (synonym—testaceum) is a Lily that will grow well treated the same as the white Lily, but both it and the white Lily will grow and bloom much better if lifted and re-planted early every year in well manured fresh soil. This is also a preventive to the leaves withering and dropping off, as they are apt to do before the plant has done blooming. As regards L. auratum, it is altogether different. "A. K." appears to have fallen into the error out of which hundreds of Lily fanciers will not, or cannot, move a single step, so much are they bound down by traditional theories. They leave the bulbs too long in the ground without attending to their requirements. Besides what we see in the season, we have Mr. Baker's authority for saying that the flowers of L. testaceum are from one to six, but sometimes up to a dozen. "A. K.," alluding to the bulb which he planted four years ago, says, "It has bloomed well every year, and this year has produced four spikes, the tallest of which is over 6 ft., and at the present moment there are just twenty-four fully-expanded blooms on it." This is not an uncommon way for some writers to state the case, but it is very much calculated to mislead the uninitiated; for, though in some instances, we have twin bulbs, and even triplets, if "A. K." were to lift his bulbs he would find that the four spikes (or more properly, stems) have sprung from four separate bulbs; for during the four years' undisturbed stay in the ground, the original bulb had time enough to propagate and multiply itself into more than four distinct flowering bulbs. If "A. K." had lifted and re-planted his bulbs of L. auratum annually, soon after flowering, giving them appropriate and fresh food, the successional bulbs would now, in all probability, have been in full and fine bloom. If I were lifting and re-planting Lily bulbs, I would pick off none of the old scales, unless they were loose; nor would I touch the old roots, as this might damage the new ones. Both old scales and old roots will decay and dry up in due course of time without interfering in the slightest degree with the growth of the new bulbs. Dunedin.

THE RUNNERS OF ERYTHRONIUM AMERICANUM.

The botanist or amateur flower collector who wanders at this season of the year (early in May) along the woodland stream or loamy hillside, can hardly fail to observe numerous colourless stems, forming, as it were, little loops 3 in. or 4 in. in length, on or near the ground, both ends being buried beneath the surface. If his curiosity should lead to a closer examination, he will find that while one end is firmly rooted, the other yields readily to his effort to withdraw it, and proves to be, not a root, as he may have at first supposed, but a stem, smooth and of uniform diameter, excepting at the end, where it enlarges into an oval knob, which, later in the season, is further developed as a true bulb, and ultimately planted by the growth force of this slender stem at the depth of 3 in. or 4 in. in the loose wood-mould. If he should trace the same stem backward, carefully loosening the earth to avoid breaking it, he would find that it had its origin, with two or three others, in the lower extremity of a similar bulb, pear-shaped, somewhat flattened, perhaps $\frac{1}{2}$ in. long by $\frac{1}{4}$ in. in thickness, to the upper end of which may still cling a single withered leaf. Should he visit the same locality a few weeks later, he will find that leaf and stems have both disappeared, and that the little bulb he saw in the process of being planted by such a deft and delicate finger has thrown out a radiating group of roots from near the lower end and, showing no other signs of growth, has evidently settled itself to await the developments of another spring time.

A whole year is a long time for our botanist to wait the solution of his problem as to genus and species; so we will anticipate the result of his observations next year. The April sun will hardly have begun to warm the south fronting hillsides ere our sleeping bulb will waken and reach up into the moist spring air a single glossy leaf, spotted or blotched all over with spaces of darker shade, which he will then recognise, or any child could tell him, is the sterile condition of his misnamed, though favourite Dog's-tooth Violet (Erythronium americanum). Soon after the leaf is fully developed spreading forth its rich juices to the influence of sun and air, three or four stolons or runners, such as already described, will protrude at the lower extremity of the bulb, and, promptly turning upwards, will be seen bursting through the surface of the ground, reaching up 1 in. or 2 in. into the air and then in a wavering, uncertain way burying themselves again in the earth to plant the bulb that shall repeat the same process next year. As is well known, in its single leaf condition this plant never blooms. In this second year of its existence, therefore, the bulb cannot have fulfilled its whole mission; if, and we admit it to be an assumption not proven, the law of Nature would give to every individual at least the chance to reproduce itself by means of perfected seed. By the third year, then, we presume the bulb will have attained the strength necessary to enable it to send up two leaves and a flower-stalk and become what it should have been called, a Lily indeed, with its pendulous golden bell.

In the Lily family, propagation by means of lateral or axillary bulbs (as a compensation, perhaps, for the frequent failure to perfect their seeds) is familiar to every one; but I cannot find that these partially aërial runners of the Erythronium, by which it projects its bulbs sometimes to the distance of 1 ft. from the parent plant, have been previously noticed. It may be well to add that these observations refer especially to one locality in what is known as Sweet Brier Glen, Fairmount Park, Philadelphia; that the mode of propagation described is the universal habit of the plant the writer is not prepared to assert.—"American Naturalist."

NEGLECTED PLANTS.

I am pleased to see that one of your correspondents has so just an appreciation of good old hardy plants, which, unfortunately, have been so much neglected. At the same time it is a matter of congratulation to find that he does not indulge in a fling at the carpet bedding system, as some of the writers in The Garden have done, denouncing it in no very mild terms. The mixed border and carpet bedding each have their merits, and must not be viewed from the same point. Nothing can be more striking than well-arranged carpet beds, and nothing more beautiful and interesting than mixed borders of annuals, biennials, and perennials. Individually, the latter must claim precedence; but, *en masse*, the carpet system stands out just as a richly-toned painting commands one's attention among a hundred less conspicuous, but equally meritorious specimens. In their proper place and on a grand scale carpet beds are wonderfully pretty. Where, however, they are undertaken, as is too often the case, in small gardens intermixed with trees and shrubs, rustic baskets, small rockwork, &c., they are as much out of place as a magnificent tapestry amid the cheap furniture and ordinary surroundings of a common room. Unless there be plenty of space and a favourable position, carpet beds had better be omitted. I am reminded of the old plants just now as the stately Foxgloves, the masses of Sweet Williams, the profusion of Canterbury Bells, and the cœrulean spikes of the Larkspur are making such a fine display, quite taking away all the glory of the beds of our finest Pansies, which a few days ago were the great attraction. And so it is the season through; the masses of Verbenas and beds of Alternantheras and Golden Feathers are beautiful, but the Gladioli, the Tritomas, and the Phloxes soon tower up and eclipse their more humble companions. Let us have not only mixed borders and wild gardens, but carpet beds also, and while we appreciate and value novelties, if they really have merit, let us not throw aside or neglect the grand old specimens which "our forefathers loved to cultivate," and which are to-day among the most beautiful and valuable of garden plants. C. M. Hovey.

Boston, Mass.

[The geometrical arrangement and clipping of dwarf plants known as "carpet bedding" is simply a modification of "bedding out." There is a true kind of carpet gardening, however, which is worthy of much more attention than it receives, and that is the growth of carpets of a great variety of dwarf hardy plants beneath tall bulbous flowers, herbaceous plants, shrubs, and low trees.—Ed.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Roses Pegged Down.—The increased amount of bloom which can be obtained by pegging down the strong branches of dwarf Roses is astonishing, yet it is a plan not so frequently adopted as one would imagine it would be, for if grown on a sloping bank, and the colours are judiciously blended, a much better effect can be produced than by Roses grown in any other way. The chief objection to pegging down Roses is that the ground cannot be readily cleared of weeds; but if a mulching of half-rotted manure or Cocoa-nut fibre refuse be applied in spring, the Roses will be greatly benefited and few weeds will make their appearance.—S.

Nymphæa sphærocarpa.—The supposed existence of a very hardy Nymphæa bearing red flowers was announced in the "Revue Horticole" last year by M. Carrière, who took occasion to express his doubts as to the truth of the story. In the number of that journal for July 1 M. Carrière states that there need no longer be any uncertainty in the matter, for he has received a number of plants of this interesting species from M. Otto Frœbel, the well-known horticulturist of Zurich, which have flowered abundantly in the open air in the tanks of the Jardin des Plantes, where they have been flourishing for some time past. M. Carrière promises to return to this subject, and supply us with a full description and figure of this new addition to our present somewhat meagre stock of water plants. Caspari has named this species Nymphæa sphærocarpa, and it is considered by some to be a variety of Nymphæa alba.—C. W. Q.

Hardiness of New Zealand Plants.—The following remarks are extracted from a paper read by Dr. Lauder-Lindsay before the Botanical Society of Edinburgh at its June meeting. They relate to the hardiness of the following plants. Clianthus puniceus elegans has stood three winters on a west wall, where it flowered splendidly last spring. It has more shining leaves and seems a more rapid grower than the type, which also stands out in mild winters in some places. Cookia Cotoneaster has stood the last two winters at the base of a wall with a northerly exposure. Craspedias —two herbaceous species, one large and the other small — have been grown in gardens about Edinburgh for the last twenty-four years. They were sent originally from Van Diemen's Land. Myosotidium nobile stood three years since in a cool glass-house with a northerly exposure, unharmed, with a temperature about 20°. A Veronica, unkown to Dr. Hooker, with remarkably narrow Rosemary-like leaves, stood out the two last winters at West Shandon, on the Gareloch. Fagus antarctica, or an allied evergreen species from South America, stood the winter of 1860—61 at Prestonhall, when the temperature there fell to about zero; but several plants were killed down to the snow-line about Edinburgh when it fell 5° to 6° lower. Arundo conspicua, an elegant Grass, is very hardy; its leaves remained fresh and green when exposed to the late severe frost.

New Annuals.—If colour in flowers is to be the test of premiership, I give the preference to the new carmine Candytuft, which is most certainly a fine variety, and has a new and very pleasing hue of colour. The dwarf white is an exact duplicate of the carmine kind, except in colour. These Candytufts are marked by a robust branching habit, a compact growth, and trusses of flowers of great size and excellent form. Beds of either would indeed be charming features in any garden. Godetia Lady Albemarle is better known, but it is a fine annual, and introduces a rich and beautiful hue into our gardens. Its true colour is a deep, rosy magenta; and, although the plants do not even yet all show that even compact habit which marks the best forms, yet the colour is the same all through. It is charming in pots, in beds, in lines. The new Eschscholtzia Mandarin is a fine plant, and the combination of reddish crimson on the outside of the petals with a rich orange within renders it singularly attractive in the mass. Exception is sometimes taken to flowers that close up when the glory of the sun has departed, but it has little force, inasmuch as flowers are thus better preserved from rains and winds. The Eschscholtzias are so hardy, that in open soil they stand the winter well; and those who have the Mandarin flowering for the first time this summer will see its glory in full next spring from old plants. I commend all these hardy annuals heartily as real gains, and veritable improvements in all their respective sections.—V.

Seedling Carnations.—A bed of these just now in full bloom affords such a supply of flowers, that it is difficult to write in terms too appreciatory of these useful plants. Seed from any good double strain invariably gives a large proportion of double flowers. Some will, of course, be single, as the finest strain of any double flowers always produces some that are either inferior or single; but even these are useful to use in nosegays. The variety that can be obtained from a packet of seed is remarkable. I gathered a few days since from a bed of seedlings a bouquet of flowers, everyone distinct, and examples of all the various sections into which Carnations and Picotees are divided by florists. The nearer the plants produce flowers allied to the florist's kinds the less freely do they produce seed; but the varied and in many cases singularly marked Continental kinds are free seeders. Few of these, however, would do for exhibition, as the edges of the petals are serrated, whilst the florist's flower must have broad even petals, with smooth rounded edges. Seed should be sown in pans or boxes in a cold frame or greenhouse in the spring; the young seedlings planted out in any out-of-the-way place for the summer; and then they may be lifted with nice balls of earth, and be planted up either in a bed, or widely distributed in a border, as may be desired. Florists divide Carnations into Selfs, of which there are several hues, white, yellow, rose, purple, crimson, scarlet, &c.; Flakes, of scarlet, purple, crimson, rose, &c.; and Bizarres, that is, two colours on a diverse ground, of which there are several forms. Picotees are more or less deeply edged, and are divided into rose, purple, crimson edges, &c.—"Field."

Hardy Water Lilies.—I have been a grower of nearly all the Lilies enumerated by "W." (see p. 54) for forty years. They were first most kindly given to me by my friend the late Mr. Kent, of Bath. He grew them in a pond—many in pots or boxes. I adopted the same plan at Bitton, but when I was transplanted hither, having no convenience for a pond, I have grown them ever since most luxuriantly in tubs, hogsheads, or old claret casks cut in two, and placed within an easy distance of a pump. Here are Lilies now in full bloom, with lofty Typhas, two Pontederias, and several Sagittarias—one, S. latifolia fl.-pl., a great beauty—altogether forty tubs, including Equisetums and other aquatics—in all, about sixty species. They are all of easy culture, and many being ready to burst the tubs, it would be a pleasure to me to distribute them to any lover of such plants rather than throw them away. I am too old to lift, label, and pack them, but I shall be pleased to give them to any one who will favour me with a visit and take them away with him. There is one feature peculiar to Nymphæa odorata which is not noticed by "W.," nor have I observed it in any botanical work. I allude to the beautiful deep purple colour of the undersides of the leaves.—H. T. Ellacombe, *Clyst St. George, Devon.*

Violet Queen Sweet Pea.—This remarkably distinct and valuable variety is dwarfer in habit than any of the other varieties which I have grown. Indeed, the seed itself is so different from that of other kinds as to suggest the idea of its being a distinct species, which is not, however, the case. The colour of the flowers is such as to be, as has been stated, suggestive of the beautiful Bougainvilleas; consequently, they are exceedingly useful for the purpose of cutting for bouquets or for furnishing vases, as they are equally highly perfumed as the other varieties, while the plant itself, whether grown in lines or in patches, is exceedingly ornamental, its dwarf habit of growth being greatly in its favour.—P. Grieve, *Culford.*

Eulalia japonica.—This plant, which was sold some years ago as a novelty, is not a new species, but only a variety with variegated leaves. This fact is now proved beyond a doubt. Some seeds of this plant gathered in France were given to M. Emil, the well-known horticulturist, of the Rue Sibuet, Paris, which produced seedlings with only green leaves. It is very possible that this is also the case with Eulalia zebrina. Here, then, are two instances in which plants, after having been described and figured as species by learned botanists, are obliged to descend from their lofty position and rank in the category of varieties. In any case, what has happened with Eulalia japonica need in no way surprise us, seeing that such events, so far from being exceptional, are more constantly the rule. If this multiplication of species continues, the word will lose its true scientific signification.—C. W. Q.

Campanula pumila alba.—This makes a good carpet either for beds or borders. It grows close to the ground and yields a profusion of white bell-shaped flowers. Beds of it, associated with a few standard bronze-leaved Japanese Acers, or other dark foliaged plants, have a fine effect. It is also an excellent plant for covering banks on rockwork, or it may be grown in pots, pans, or baskets, with good results.—S.

The Notch-lipped Slipperwort (Calceolaria crenatiflora).—This old, but little known, Chilian plant has much to recommend it. Its flowers are large and of a bright yellow colour with a peculiarly notched lip, and are borne very profusely on slender stems about 1 ft. high. It seems strange that such a distinct plant should have so long escaped general cultivation, as it has been introduced for nearly fifty years.—W.

Fuchsia microphylla.—I always make a point of growing a few species of Fuchsias, and I like to have in contrast the bold and massive F. fulgens and the diminutive F. microphylla. There is another reputed species known as F. thymifolia, which, though greatly resembling F. microphylla, is said to have larger leaves, and to have flowers a trifle larger, and it possesses a greater depth of colour. Both make very pretty pot plants, and would do well as an edging to a bed of taller-growing Fuchsias.—D.

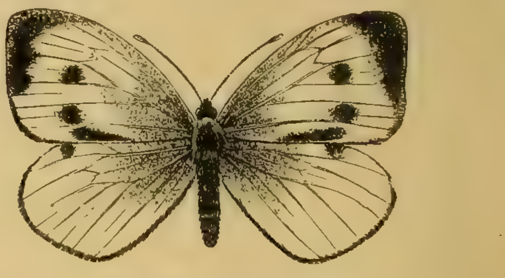
GARDEN DESTROYERS.

THE WHITE CABBAGE BUTTERFLY.

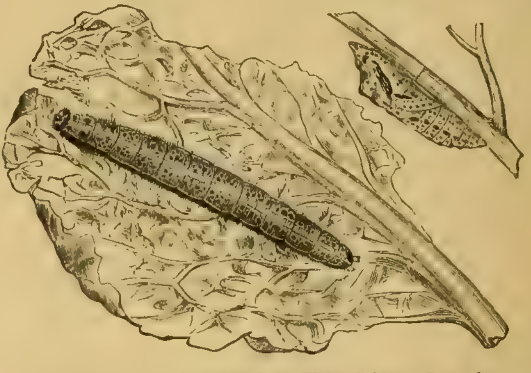
(Pieris brassicæ.)

White Cabbage butterflies are common all over Great Britain from May to October, and are in no way injurious to vegetation, as they feed entirely on the nectar of flowers. The caterpillars, however, commit sad havoc among all kinds of Cabbages, Radishes, Horseradishes, and Turnips, and are a great source of trouble and annoyance to kitchen gardeners.

In both sexes of this insect the wings are white, more or less finely sprinkled with black at the base. In the upper wings the front margin and a somewhat crescent-shaped spot at the tip are black. In the lower wings there is a blackish spot near the upper margin. On the upper wings of the female there are also two round black dots, one above the other, about two-thirds the length of the wings from the base, and a black splash near the middle of the lower margin. The undersides of the wings in both sexes are alike, the upper wings being white with yellowish tips and with two black spots near the centre of each wing; the lower wings are pale yellow. The head, thorax, and body are blackish above and pale grey below. The antennæ are long and slender, with a small club at the end; they are black with the tip and underside of the club yellow. The males are rather smaller than the females; the former measure across the wings when expanded 2½ in.; the former about 3 in. The eggs are bright yellow in colour, somewhat cone-shaped, deeply furrowed lengthways; they are laid twenty or thirty in a cluster on the undersides of the leaves of Cabbages and other cruciferous plants. The first eggs are laid about the end of May, and early in June the first larvæ or caterpillars are hatched; but there are a succession of broods during summer and autumn. The caterpillars have thirteen joints, not including the head. The first three of these each bear a pair of legs, on the next two the legs are wanting, the following four have each a pair, the next three have none, and there is a pair on the last. The caterpillars when full grown are about 1½ in. long, pale blue or green above and yellow beneath. They have a yellow stripe



White Cabbage Butterfly.



Caterpillar and Chrysalis of the White Cabbage Butterfly.

with a row of black spots on either side of it down the middle of the back, a row of large black spots down each side, and various black specks and fine hairs scattered over the body. Soon after attaining its full size, the caterpillar seeks some sheltered place, such as the trunk of a tree or a paling, and assumes the chrysalis or pupa state. The chrysalis is pale green, spotted with black, and with three yellowish stripes; the butterfly emerges from it in about a fortnight. The chrysalides of the last brood, however, remain alive during the winter, and the butterflies do not make their appearance until the following spring.

This insect when in the caterpillar state fortunately has many enemies. Among those most fatal to them are the ichneumons (four-winged insects with long, slender bodies), of which there are several kinds; these insects are armed with long ovipositors with which they pierce the skin of the caterpillar and deposit their eggs in its body. The eggs soon hatch into grubs, which in time kill the caterpillar, but not until it is nearly ready to assume the chrysalis state. Other small insects, nearly allied to the ichneumons, lay their eggs on the chrysalis, and the grubs when hatched eat their way into it and eventually destroy it. Several kinds of birds devour the caterpillars, and wet weather at times causes great mortality among them. There does not seem to be any way of ridding a garden from this insect, except by encouraging its natural enemies, and destroying it whenever practicable in whatever state it may be found. S. G. S.

NOTES FROM KEW.

Hardy Shrubs.—One of the handsomest and most distinct of all the Brambles is a new species—Rubus phœnicolasius—which we first saw in the Paris Jardin des Plantes, and which has but recently found its way into English gardens. The Kew specimen, planted out in one of the borders of the Winter Garden, is at present one of the most striking objects of which Kew can boast. As we have seen it do well as a wall plant we class it amongst hardy shrubs. The large leaves are uniformly composed of three leaflets, and the stems and leaf-stalks are densely clothed with small needle-like prickles and long, gland-tipped hairs; the beautiful coral-like fruit is a bright scarlet and the under surface of the leaves is nearly snowy-white. The young stems and leaf-stalks, too, are of a decided reddish tint at first, but as they become old they assume a deep brown colour. Spiræa Pallassi, evidently a near relation of the Himalayan S. Lindleyana, has larger flowers of a purer white than that species; both are fine shrubs, and worthy a place in any shrubbery, if only for their elegant pinnate leaves. Viburnum macrocephalum is a charming shrub of dwarf habit and bears large heads of white, showy flowers in profusion.

Hardy Aquatics.—A North American Marsh Marigold, Caltha leptosepala, although not so showy as the common C. palustris of our marshes and ditch banks, has the merit of novelty to recommend it, being quite new. It has smaller leaves than the British plant, and flowers about the size and colour of those of the white-flowered Lesser Celandine (Ranunculus Ficaria); it has, however, hardly had a fair trial as yet, and may much improve in beauty ere long. Samolus littoralis, a New Zealand representative of our Brook-weed (S. Valerandi), is very much superior in every respect to that species; it grows about 1 ft. high, and bears clusters of showy flowers, white tinged with rose. A beautiful and elegant plant is the North American Pontederia cordata; it grows about 3 ft. high, has deep green leaves and numerous spikes of blue flowers; in every select collection of aquatics this should find a place. Justicia pedunculata, a native of the same country as the last, attains a height of from 2 ft. to 3 ft., and forms a pleasing mass of stems with narrow leaves, from the axils of which spring long-stalked spikes of white and purple flowers.

Hardy Herbaceous Plants.—Solanum Torreyanum, a new species, deserves special mention. It grows about 15 in. or 18 in. high, and the blue flowers, which are borne in large clusters, are 2 in. in diameter; the conspicuous yellow anthers lend additional beauty to this charming perennial. Another new plant, and a very lovely one, is Œnothera sinuata var. maxima, a native of Texas, and one of Mr. W. Thompson's recent introductions. It grows from 2½ ft. to 3 ft. high, but flowers freely at 1 ft.; is of erect, branching habit, without the coarseness of many of the other species of Evening Primrose, and the bright yellow flowers are nearly 3 in. in diameter. Œ speciosa, 2 ft. high, is a very free bloomer; the large blossoms are white with a yellow centre. Statice spicata is a neat little plant only about 3 in. high; the spikes of pale rose-coloured flowers spring from a little rosette of deeply-cut leaves. Specularia pentagona, a very showy annual, has flowers more than twice the size of those of S. hybrida. Campanula strigosa, another desirable plant, is a very free-flowering kind, and grows about 6 in. high; the colour of the flowers is blue. Mulgedium macrophyllum, a United States Composite, is a striking plant, and a very ornamental one; the large root leaves are heart-shaped, and the flower-stem, which reaches 3 ft. or more in height, bears numerous large, delicate purple flower-heads. Kniphofia Rooperi, one of the smaller-growing kinds, has a flower-stem about 2 ft. high, the curved flowers being scarlet and deep orange-red. Milla grandiflora, from 6 in. to 1 ft. high, is a lovely bulb, with umbels of fine blue-purple flowers. Mesembryanthemum tricolor and M. tricolor album are two extremely handsome kinds, the former having brilliant rosy-crimson blossoms. Few plants—if we except some of the Fig Marigolds—make a more charming show when seen in sunshine than the beautiful little Cape succulent Grammanthes gentianoides. It has small fleshy leaves, and forms dense tufts (about 3 in. high) covered with star-like, yellow or orange-red flowers; it should have a sunny spot and open sandy soil in which to grow. Calochortus luteus is a very attractive sort; the flowers are bright sulphur-yellow, each petal being spotted with brown, and bearing a blotch of deep orange-coloured hairs near its base. One of the most stately of the Teazel-worts is Cephalaria tartarica, a native of Russia and Siberia; it reaches a height of 9 ft., and bears numerous heads of straw-coloured Scabious-like flowers. This species and C. procera, which is even taller than C. tartarica, are well adapted for planting in masses where bold and striking effect is desired. A near relation of these two, but one totally different in habit, is the pretty little Grecian Scabious (Scabiosa Parnassi). It forms a dense, cushion-like mass not more than 1 ft. in height, and is covered with a profusion of light purple flowers. Lotus hirsutus, a shrubby plant with rose-coloured flowers, has woolly leaves and stems, and is a distinct and striking plant. Phygelius capensis, as a wall plant in a sunny spot, makes a splendid show; the leaves and stems much resemble those of the common Figwort of our river banks, but the drooping flowers, which are of a brilliant red colour, are very conspicuous, and are produced in great abundance.—†

Kew Gardens.—I was suprised to see in one of your late issues an article about Kew Gardens so at variance with the facts, that I must ask you to correct it. The residents seldom use the Gardens. I and my family, and many other families here, do not trouble them with our presence for weeks together sometimes, and should not do so even if open at sunrise. In the interest of the public only have we agitated this matter, seeing as we do daily the numbers of disappointed people who arrive from all parts at ten or twelve unable to gain admission. I am day by day a witness of this fact, and have known many go away, as they had arranged to spend the afternoon elsewhere. Last week some Americans accosted me, and expressed great disgust at the want of freedom in this country, closing for the best part of the day gardens which, they said, in the States would be public property, being paid for by the nation. Bear in mind also that we are only acting in accord with Richmond select vestry, the Corporation of Kingston, the Chiswick and Hounslow Local Board, the vestries of Chelsea, Kensington, and Paddington, besides many other localities. I think, therefore, that we, the inhabitants, do not deserve the censure your article places on us. As to the students, it is well known they are nearly all *nil*, and I can assert that many of them come after 4 p.m. I can name several well-known men who do so, and who laugh at the idea put forth that the Gardens should be kept closed for their supposed benefit. The compromise you speak of is none at all, for it has the effect of being misunderstood by the general public, who flock here as early as ten expecting to be admitted. To-day nearly 100 people were seeking admittance before eleven; many accosted me and expressed annoyance at having to wait till one. Several went back, others asked where they could get refreshment to fill up the time. Who fills the public-houses, may I ask? I think in this case the obstructives at Kew, is the answer.—John E. Richard, F.R.A.S., in "Gardeners' Magazine."

The Meadow Rue-leaved Dicentra (D. thalictrifolia).—This is a charming hardy climber. It much resembles Adlumia cirrhosa, but is far more robust in habit, and the leaflets are larger; moreover, it is a perennial. It bears small, yellowish blossoms, which are not very conspicuous. It is a native of Nepaul and parts of the Himalayas, and has been known in gardens for about forty years, generally under the generic term of Dactylocapnos. Its culture is very simple. Seeds may be either sown in pots in the ordinary way in spring, and the seedlings planted out under the shade of a hedge, trelliis, wall, &c., or it may be sown a little later in the season in the place in which it is intended to remain. A mixture of loam and peat, with the addition of a little sand, will suit its requirements.—A.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

July 23.

On this occasion the National Carnation and Picotee Society held its Southern Section annual exhibition in conjunction with the Floral and Fruit Committee meeting of the Royal Horticultural Society. The principal exhibits belonging to the Horticultural Society consisted of collections of Abutilons and double Zonal Pelargoniums from the Society's garden at Chiswick, groups of Balsams from Messrs. F. & A. Smith, of Dulwich, and Stocks grown in pots from Mr. Wills' nursery at Anerley.

First-class Certificates were awarded as follows :—

Rose Harrison Weir (Turner).—A very double flower of rare substance and of a brilliant crimson-magenta colour, shaded with bright purple. It is of the Duke of Edinburgh type, large and full, and deliciously scented. It has a vigorous constitution, and succeeds perfectly on the Manetti stock and as a standard on the Brier.

Pelargoniums Beauty, Pixie, and Ariel (Pearson), all belonging to the Echinatum breed, and well worth growing; their prevailing colour is rose of various shades, and they are all effectively spotted with black.

Orchids.—Sir William Marriott showed three panful of Disa grandiflora superba, all remarkable examples of good culture. Collectively, the plants bore nearly thirty strong flower-spikes, each of which was surmounted by a pair of brilliantly-coloured blossoms. Mr. Speed, Chatsworth, also sent a plant of Disa grandiflora bearing an unusually strong flower-spike furnished with nine large buds and blossoms. Mr. James, Castle Nursery, Lower Norwood, showed a fine variety of Oncidium prætextum named superbum. It bore a branching spike of rich chocolate blossoms, the lip being blotched with bright yellow.

Abutilons from the Society's gardens were represented by twenty-one kinds, the best of which were the white Boule de Niege, the lemon-yellow Reine d'Or, the drooping variegated vexillarium, so useful for clothing walls or rafters in conservatories, or for grafting on strong kinds and growing in the form of standards for table decoration. Others consisted of Louis Marignac, a pale pink-flowered very distinct variety; and the variegated-leaved Darwini and tesselatum formed a striking contrast with the green-leaved kinds.

Balsams shown by Messrs. F. & A. Smith were remarkable for their dwarf habit of growth and the size of their blossoms, many of which were almost as large as those of a Camellia and equally double. Their colours varied from pure white, salmon, and cream colour to the brightest rose, purple, and brilliant scarlet, and there were, moreover, several beautifully striped and spotted kinds. These constituted one of the finest strains of Balsams that has been exhibited for some time.

Mr. G. F. Wilson, Weybridge, contributed a plant of the Swamp Lily of North America (Lilium superbum) furnished with two strong stems 8 ft. long, each surmounted by from twelve to fifteen orange-scarlet, beautifully-spotted blossoms. It was exhibited for the purpose of showing to what perfection this kind can be grown in pots.

Messrs. Veitch & Sons exhibited examples of Celosia pyramidalis, an admirable pot plant for the conservatory. Its habit is pyramidal, and it bears large magenta-coloured plumes from the point of every shoot. The same firm also showed the new yellow-flowered Torenia, which, when well grown, is likely to be as good as T. Fournieri. Lady Dorothy Nevill exhibited a variety of Cockscombs, all of which were very pretty, and for which a vote of thanks was awarded.

Mr. Brown, The Nurseries, Truro, contributed three small-growing Thujas. One having a pyramidal habit and gold-tinted foliage was named T. aurea erecta; the other two were of bushy growth, with compact, round heads. One named Thuja aurea Browni was of a bright gold colour; the other, T. sulphurea nana compacta, was of a silvery-green suffused with pale yellow. These little Conifers seemed well adapted for pots or small vases, or for planting in select positions. Mr. G. Aslett, The Gardens, Warren Wood, sent a silver variegated Myrtle in flower. It was named Myrtus latifolius argenteus, and seemed to be well adapted for pot culture.

Messrs. Veitch & Sons exhibited a basket of plants of Olearia Haasti, a hardy shrub, literally covered with whitish, sweet-scented blossoms.

Mr. Wills' Ten-week Stocks were shown in 5-in. pots. They were remarkably dwarf and bushy in habit, and their colours consisted of rose, purple, salmon, yellow, mauve, violet, blue, and white. The trusses were large and the flowers very double and well-formed; altogether, a fine strain for pot culture or for planting in small beds.

Among the best double Pelargoniums from Chiswick were Emily de Girardin, pink; Ernest Louth, dark scarlet; Madame Thibaut, rosy-pink; La Constitution, salmon; Jewel, very double, scarlet. There were also some very attractive seedlings in this collection, including several white-flowered kinds. Mr. Barron again sent from Chiswick finely-grown plants of Torenia Fournieri, showing that under good treatment it will continue in flower for a great length of time.

Cut Flowers.—Messrs. Paul & Son, Cheshunt, exhibited several new Roses. They consisted of Mrs. Laxton, bright rose; Marquis of Salisbury, magenta, shaded with purple; and Duke of Teck, bright velvety scarlet.

Mr. Turner, Slough, sent a boxful of blooms of a new Rose named Harrison Weir, which attracted much attention.

Mr. Cannell, Swanley, sent boxfuls of cut blooms of Verbenas, which were much admired. The trusses were large, and the flowers, individually, almost equal in size and form to those of Phlox Drummondi. Among the most attractive were Isa Brunton, magenta-purple, with a white eye; General Picton, dark crimson; La Lovie, violet, agreeably scented; Edwin Day, lively scarlet; George Brunning, velvety-maroon, shaded with purple, and having a clear white eye; and Lady of Lorne, white, shaded with pink. There were also several beautifully striped varieties.

Mr. Parker, Tooting, sent cut sprays of a double pink-flowered Blackberry profusely laden with round button-shaped blossoms.

Mr. G. Smith, Caledonian Nurseries, Guernsey, exhibited cut spikes of Sparaxis pulcherrima 6 ft. in length, crowded with bright, rose-coloured, bell-shaped blossoms.

Some Clove Carnations came from Chiswick. Blooms of Dianthus of the Heddewigi type and Phloxes from the same place were also much admired.

Fruit.—A fine collection of Melons was shown by Mr. Clark, Melton Constable, and Mr. A. Donaldson, Stoodleigh, had severa dishes of Peaches and Nectarines, the best of the latter being Pine-apple, and the best Peaches, Early Louise and Early York. A few Apples and Pines were also shown.

CARNATION AND PICOTEE SOCIETY.

In point of numbers this show was not so good as that of last year; it was held too late for the southern growers, but, notwithstanding that, excellent blooms were shown in all classes. They were, backed up as usual by cards, an objectionable practice, at least, in the case of plants in pots.

First-class Certificates were awarded as follows :—

Picotee Royal Visit (Turner).—A fine smooth-petalled flower with heavy pink edge.

P. Henry Tait (Turner).—A seedling from Prince of Orange, with a fine yellow ground and bright crimson edges.

P. Eleanor.—A fine double flower from the same source as the above, of a sulphur colour, slightly tinted with pink.

P. Alice (Turner).—Another seedling from Prince of Orange, of free growth and remarkably floriferous. Its blossoms are very large; the petals are beautifully incurved and of a bright lemon colour, heavily edged with bright crimson.

P. Ophir (Turner).—A fine double flower of a pure sulphur colour. A very distinct and attractive kind.

P. Lord Beaconsfield.—This is also a seedling from Prince of Orange. Its ground colour is of a rich creamy-yellow, and it is heavily edged and striped with bright orange-crimson.

P. Lothair (Turner).—A large and finely-formed flower heavily edged with dark crimson.

Carnations.—The best twenty-four blooms of these came from Mr. Douglas, gardener to F. Whitbourne, Esq., Loxford Hall, Ilford. Amongst them we noticed fine blooms of Eccentric Jack, pink and purple Bizarre; James Cheetham, scarlet flake; Captain Stott, purple and rose Bizarre; Squire Meynell, purple flake; and Dreadnought, crimson Bizarre. Mr. Turner, Slough, had fine, large, smooth-petalled blooms. Amongst his Bizarres the best were Albert Chancellor, purple and pink; the Lamplighter, purple and rose; and Jenny Lind. The best pink flakes were Guardsman, Maid of Athens, Rosabella, and Miss Napier; and the best crimson flakes were William IV. and Superb. In other collections the best Bizarres were Sir J. Paxton, scarlet and dark crimson, very smooth and well formed; Admiral Curzon, Mars, and Graceless Tom, pink and violet; Unexpected, pink and claret; Garibaldi and Mercury. Among scarlet flakes the best were Annihilator, Sarah Payne, Sportsman, and Clipper; and of rose flakes the best were John Keat, Mrs. Dodwell, and Sybil; the best purple flakes were Mr. Douglas, Ajax, Earl Stamford, James Taylor, and Squire Meynell.

Single Specimen Carnations.—The best amongst Bizarres were: Scarlets—True Briton, Garibaldi, and Curzon; crimsons—Jenny Lind, John Simonite, and Captain Stott; pinks—Jas. Taylor, Sarah Payne, and Eccentric Jack. Of purple flakes as single specimens the best were: J. Douglas, Ajax, and Squire Meynell; scarlet flakes—Annihilator, Clipper, John Bailey, and Sportsman; rose flakes—Sybil, John Keat, Mrs. Green, and Rose of Stapleford.

Picotees.—These were much superior to the Carnations both in numbers and quality of bloom. The best in the large collections which came from Mr. Turner and Mr. Douglas were, amongst heavy-edged kinds—Lothair, elsewhere described; Brunette, dark crimson; John Smith, red; J. B. Bryant, crimson, large and fine; Selina, violet; Royal Visit, pink; Medina, purple; Mrs. Fuller, bright crimson; and Norfolk Beauty, violet-purple. Of light-edged kinds there were excellent blooms of Minnie, purple; Mary, purple; Seedling, crimson; Mrs. Payne, pink; Mrs. Langtry, purple; Rev. F. D. Horner, rose; Alliance, violet; Miss Lee, red; and Ethel, pink.

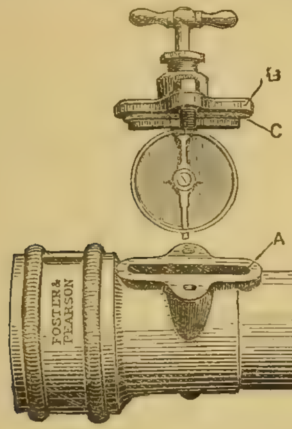
Single Specimen Picotees.—The best of these were heavy-edged kinds: Reds—John Smith, Princess of Wales, and Dr. Abercrombie; purple—Mrs. Albert Chancellor, Zerlina, and Mrs. Niven; rose or scarlet—Mrs. Payne, Juliana, and Mrs. Horner. Amongst light-edged, rose or scarlet, the best were Victoria, Miss Wood, and Lucy; purple—Mary, Alice, and Mrs. Douglas; red—Thomas Williams and Violet Douglas. The best yellow ground Picotees were Hon. Mary Lascelles, Prince of Orange, and Alice Waite.

Plants in Pots.—These were shown in small numbers. Mr. Turner's collection of seedlings from the Prince of Orange were much admired on account of their free growth and abundance of bloom. Mr. Douglas had a good collection, and Mr. Ware sent Picotee Lady Armstrong, a sort with a pyramidal habit and flowers having a yellow ground edged with scarlet. Sulphur Pink, from the same exhibitor, bore beautiful fringed-edged flowers of a pale yellow colour and very attractive.

The list of prizes awarded on the occasion will be found in our advertising columns.

PATENT SLOT THROTTLE VALVE.

In the management of greenhouses it frequently happens that a valve fails to properly regulate the flow of the hot water through the pipes being set fast with rust and dirt, or through some carelessness in turning the handle by which the valve spindle has been strained.



A smith is sent for, and he shows the impossibility of repairing the mischief without cutting the valve entirely from the pipes, and as valves are often placed under floors and surrounded by brickwork, a heavy bricklayer's bill follows that of the smith, and the interior of the greenhouse is completely upset. The patent throttle valve, manufactured by Foster & Pearson, horticultural builders, is said to remove all danger of these annoyances. The following illustration will explain the principle of the valve. On the top of the valve is a longitudinal slot large enough to allow the valve wing being passed through it. This slot is covered by the cap B, which is secured by two screws, and the joint between the valve and cap is made sound by an india-rubber ring C. By this arrangement the working parts can be removed for repair without disturbing the body of the valve and the cap will not be set fast, as is the case when lead paint is used to make the joint. As the two screws are in the top of the valve they can always easily be taken out in any position in which the valve handle can be reached. One more point worthy of notice is that these valves can never be spoilt in the way that so many are, namely, by having the handle turned the wrong way; this is obviated by inserting a small pin in the cap, which works in the collar of the brass spindle, and renders it impossible to turn it past the centre when opening the valve. By the use of these valves in a hot-water apparatus much after trouble will be saved.

DINNER-TABLE DECORATIONS.

I cannot allow "J. S. W." to stand alone in his sensible condemnation of one of the most senseless innovations of modern times. We have been taught to believe that there is a place for everything, and assuredly there are many places for flowers, comparatively few of which are yet filled with such taste as they might be; but I never could see that the dinner table was a fit place for such ornate decorations as have been placed upon it. The decorations are inconvenient and incongruous. Almost everything could be found or seen on the table but the dinner. Old-fashioned ladies, as well as gentlemen, never took kindly to the dinner-table decoration mania. Only a year or two ago a lady, high in rank and social influence, drove home from a grand dinner at a neighbour's house and ordered mutton chops, as she had not dined, and could not, as both Lady L.'s flower garden and conservatory seemed crushed on to the table. The old plan of an epergne and centre-piece was much more sensible. The dinner and dessert were still the chief objects on the table; the guests dined in comfort with abundance of good talk to aid digestion. But now there are rocks, lakes, streams, waterfalls, ponds, fish, glaciers, dense masses of foliage and flowers, banks of Moss, zinc tins and glass dishes innumerable—all piled on the table to swamp the dinner with the most heterogenous assemblage of incongruous accompaniments, and prevent the diners often from seeing either each other, or their dinner, or, indeed, anything save the decorations. Now, not only are such decorations incongruous, but untrue to facts and incompatible with convenience. "J. S. W.'s" old diner-out, who regularly cleared his table space for dining as a commander might the deck of his ship for action before a storm or a battle, was far more sensible than those who had fettered his freedom with their crowded, cumbersome decorations. Decorate as we may, no one can convert a dinner table into a conservatory, a flower garden, or a bit of charming landscape. And were it possible, to what good would it tend? Comfort, plenty, good society constitute the substantial charms of the dinner table. By sweeping nine-tenths of the decorations of the day off our dinner tables, the comfort of the diners would be vastly enhanced. It is time to affirm that mere mass of materials is no proof of taste; and that display for its own sake, whether on the dinner table or elsewhere, is one of the surest symptoms of vulgarity. D. T. F.

—— I hope your correspondents would not object to a few good flowers arranged in a graceful and simple manner. I can hardly understand anybody objecting to that. It is no doubt the elaborate and painsgiving display seen at London shows that he objects to. I have myself never happily seen these away from the said shows, but no doubt many persons are led to worry themselves in imitating them. I believe all arrangements piled up in the middle of the table, however well done, are wrong, so far as the ordinary dinner-table is concerned. A good Rose or a few buds beside each guest in a small glass, or a few flowers gathered shortly before the dinner, and arranged in a few minutes by any person caring about flowers, is what seems to us most desirable in the matter of table decorations. It is clearly wrong to make the men and women round the table subsidiary to the floral display; they must be so in the case of many of the "compositions" we have all seen. Apart from appearance and comfort, there is another reason why dinner-table decorations should be simple and unpretending, and that is, the shortness of the time in which the flowers are seen on the dinner table. E. D.

—— I have just a few words more to say on this subject and then I will leave the discussion to others. I shall have done some little service if my remarks do no more than call attention to a practice which is being carried to such an absurd length. I speak of the custom as we find it. Were table decorations confined to a plant or two, or a bouquet of flowers—something simple and chaste—there would be no reason to say much about it; but it is not so. I am perfectly familiar with table decoration as it is carried out in West End mansions and in country houses, and I know that while in many of the most distinguished houses it has never been pushed to an extravagant extent, in others the custom is ridiculously overdone. The table is completely littered over with plants and flowers to its very margin, and sometimes the table cloth is first covered with Moss before the flowers are put on. I was perfectly well aware that some of your correspondents might combat me with my own weapons by attempting to turn the argument against me in reference to the furniture and decorations of the dining-room, the pictures, carpets, &c., but that is begging the question. I do not mean to deny the ordinary accessories to a comfortable dining-room; but people do not go into a dining-room to have their attention distracted by the pattern of the carpet, and as for the pictures and other essential decoration of the walls, the diners, as a rule, turn their backs upon them when they sit down to table; but the flowers are set before them, interrupt conversation, and impede the diner's general freedom of action. As to the prettily painted dinner services to which "F. R. H. S." refers, I have no particular objection, but could do just as well without them. As dinners are conducted now-a-days, the diner has hardly any opportunity of admiring the patterns on the bottoms of the plates. Although I wrote against the use of flowers for the table, I did not condemn table decoration of every description. I only said that it might safely be left to "the cook, the confectioner, and the fruiterer, who possess the art and everything else to render a dinner-table as attractive as it can be made," and I repeat that statement. Personally, I have no occasion to seek release from the practice, as "W. T. T."—whom, I guess, has rather a craze on the subject—insinuates; but I can express an opinion, entertained by others besides myself, on a custom which indicates a rather effeminate kind of "civilisation." A man may have cultivated tastes, and may be an ardent admirer of flowers without caring to have them thrust upon his notice in season and out of season; and such a man will be able to dine like any other rational being, and find topics of conversation without having his other senses regaled at the same time with the sight and odour of flowers. J. S. W.

[We have received other letters from gardeners complaining, not only of the time taken up in dinner-table decoration which might be otherwise more profitably employed, but also of the way in which both flowers and plants are cut to pieces to serve a purpose which lasts for so short a time. Some of them complain, too, that more is expected of them in this way than their means at command will afford.]

ANSWERS TO CORRESPONDENTS.

Tea Roses.—I shall feel much obliged by your giving me the names of a few good Tea Roses of rather recent introduction.—M. [The best comparatively new Tea Roses are—Anna Ollivier, Catherine Mermet, Comtesse de Nadaillac, Jean Pernet, La Boule d'Or, and Marie Van Houtte.—S. R. H.]

Fuchsias.—Will you be kind enough to inform me which of the following Fuchsias were sent out first: Purity, Dr. Jephson, or Venus Victrix?—G. F. F. [Venus Victrix. It was sent out before Dr. Jephson.]

Clipping Yew Hedges.—When should this be done?—A. Z. [Yew hedges should be trimmed at midsummer and towards the end of autumn. When not in a healthy and vigorous state of growth once a year is sufficient, and that may be done any time between autumn and spring.—G. B.]

Nozzles for Garden Fountains.—Can any one tell me the best place in London to get these, for a large jet, to throw the water in different patterns?—L. A. [Try Tyler & Sons, Newgate Street; or Warner & Sons, Jewin Crescent, Aldersgate Street.]

Wiring Walls.—I have a new wall, with eyes put in for galvanised wire 3 in. apart and ½ in. from the wall, and 6 ft. apart lengthways. Is that a proper distance to have the wires? or should they be further apart? I am anxious to know, as there has been a good deal said of late about galvanised wire attracting electricity, but I think myself that it is too tight tying the branches that causes the injury to the bark complained of.—A. A. [6 in. apart will be a good distance for most fruit trees, but for Pears they should be 9 in. asunder. Your wires will be too far away from the wall; there should only be just room between them and the wall to pass the tyes through.—S.]

Woodlice in Cucumber Frames.—How can I destroy woodlice in a Cucumber frame? They have eaten more than half the Cucumbers, and I have tried several ways to destroy them, but without effect.—H. B. [In order to clear frames from woodlice, remove the heating materials as soon as the crop is cleared out, then fill up all the crevices with mortar and thoroughly drench any portions of the pit or frame, where any have found shelter, with boiling water. The best traps for woodlice are ordinary flower-pots half filled with dry hay and baited with Potatoes. They will congregate in these, and, if emptied out every day into a pot of scalding water, their numbers may soon be reduced to reasonable limits.—J. G. S.]

Names of Plants.—*J. M.*—The tree with red berries (from near Cairo) is a species of Rhus; further than that it is impossible to say without much better material to work upon. *B.*—1. Spiræa Douglasi concolor. 2. Douglasi. 3. Reevesi. 4. canadensis. *H. L. & Son.*—The tall plants appear to be varieties of the common single Rocket; the composite is the orange-flowered Mouse-ear Hieracium (H. aurantiacum). *Rosa.*—From the very dry specimen sent, we cannot be sure of the name of your Rose, but it looks like the Old Musk. *M. J. S.*—Next week.

Drying Everlastings.—How can I dry the blooms of such plants as Catananche cœrulea and similar Everlastings? All mine shrivel up into the seed vessel when dried.—I. [Gather them when fresh and young, *i.e.*, not too much open, place them on shelves in a dark store-room, and they will dry perfectly.—W. R.]

Ants in Grass.—How can I get rid of ants in a Grass lawn? It is an old piece of turf which has now become coarse from want of cutting, the ants preventing the use of either scythe or machine.—W. E. W. [Now that the ants have got established you will scarcely be able to dislodge them or make a turf fit for a lawn without adopting radical measures, such as trenching up the whole plot and keeping it well cultivated during the ensuing winter. Early in spring the surface may be carefully levelled and re-sown with a good lawn Grass mixture, and afterwards kept frequently rolled. Paraffin oil or guano will dislodge ants or drive them to seek fresh quarters; but if the whole plot be in the rough state described, the only way to produce a satisfactory result would be to adopt the first recommendation.—J. G.]

Figs.—Are Bourjassotte Blanc and White Marseilles sufficiently hardy to be planted out in an orchard?—S. H. F. J. [These Figs are sufficiently hardy to withstand any ordinary winter without protection if the wood be thoroughly ripened; but an orchard where they would be shaded during summer by taller trees would be about the worst position to select for them. In fact, it is only in the most favoured counties that the Fig ripens its fruit on open standards. If a warm aspect on a wall be not available, select the most sheltered position possible with full exposure to sunshine, confine the roots in order to check over luxuriant growth, and press the soil very firmly about them. As standards or bushes Figs require very little pruning. Black Bourjassotte and Bourjassotte Grise are of medium size and excellent quality, and would probably prove better adapted for this mode of culture than larger varieties.—J. G.]

Culture of Raspberries and Strawberries.—Could you inform me on the following points, viz.:—1. What kind of land is best suited for the cultivation of Raspberries and Strawberries? 2. What is the best aspect? 3. What should be about the cost per acre respectively of Strawberries and of Raspberries, the latter to be trained on wire runners? 4. What would be the best sorts, the place being the counties of Forfar, Fife, and Perth.—J. E. S. [1. The best kind of land for Raspberries and Strawberries is a deep friable loam or alluvial deposit, where drought (the greatest enemy of these crops) is not likely to affect them. 2. The best aspect is an open one with shelter from the north and east, a valley with high ground to the north or woodlands. 3. The cost per acre cannot be given with any kind of accuracy; if done at ordinary catalogue prices, viz., Strawberries 3s. per 100 and Raspberries 2s. or 3s. per dozen, the cost per acre might prove a formidable affair; but large quantities can generally be procured at lower rates. Training Raspberries to wires with a row or two of Strawberries between them is about the best method to adopt. 4. As to varieties of Raspberries, Reds may consist of Fastolf, Red Antwerp, Semper Fidelis, and McLaren's Prolific; yellows of Antwerp and Yellow Magnum Bonum. Of Strawberries the best are Vicomtesse Héricart de Thury, Sir C. Napier, Keen's Seedling, President, Sir J. Paxton, Sir Harry, Oscar, and British Queen.—G.]

Early Louise Peach.—This useful early Peach was ripe here this year on a south wall out-of-doors on July 18. In a cold Peach house facing east, the same variety was fit for use on July 2. This Peach will be found invaluable for early forcing.—H. Harris, *Denne Park, Horsham.*

Prolific Peach Tree at Sunbury Park.—Although I regret that Mr. Groom should doubt the accuracy of "J. F.'s" report (see p. 50), yet I am pleased to see his remarks, and I quite agree with him that it is necessary that all such reports should be verified. In my case parties far and near, who have seen for themselves, can confirm "J. F.'s" statement, and I am sorry that Mr. Groom has not himself seen the tree in question, as it would have agreeably surprised him. I am now gathering from it daily Peaches that weigh from 6 oz. to 8 oz. each, and of first-class quality.—Thos. Cowburn.

Re-planting Lilies.—"Dunedin" says (see p. 62) that I am opposed to early re-planting or potting as the case may be, but in this he is mistaken. I am as thoroughly convinced of the advantage of early re-planting, as any one can be. In my reference to autumn-blooming varieties, I by no means suggested that the best season for re-potting them was the best in the case of early-flowering kinds.—J. Groom.

A communication has been received from Thorncliffe, Dukinfield, without the name of the writer, so we are unable to forward as requested.

No. 350.] SATURDAY, AUGUST 3, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

SUMMER-FLOWERING CHRYSANTHEMUMS.

THESE are flowering much later than usual this season, owing doubtless to the comparative absence of bright sunshine. Last season they were three weeks earlier, but even now they are sufficiently attractive to entitle them to a foremost place in every collection of perennials, and a few of them might even be planted in the smallest border in which plants are grown. This section of Chrysanthemums is as yet little known; therefore, a few notes respecting them may be useful. Their propagation and cultivation are the same as in the case of the ordinary varieties, and they may be used for the same purposes; but they flower from June to November, thereby producing a display long before the ordinary varieties have begun to open their blossoms. C. indicum nanum is one of the best of the group; it is exceedingly dwarf and compact, and forms a handsome, well-feathered bush from top to bottom. In hot weather many varieties become what is termed leggy and miserable-looking, but in the case of this variety, even during the brightest weather, one can scarcely ever find a yellow leaf, owing to the branches closely covering the soil, and keeping it cool and moist. In this respect it is distinct from all others belonging to this group, as they partake more or less of the upright growth of the ordinary Chrysanthemum. The flowers, which are of a delicate cream colour, deepening towards the centre into yellow, are of medium size, the petals being broad, good in substance, and recurved. Precocité, another good kind erect in habit, has flowers of medium size, and of a bright golden-yellow, with flat, incurved petals. In Bois Duval the petals are also incurved, and the prevailing colour is purplish-rose striped with white. The flowers are smaller than those of the preceding, but they are so numerous as to render it conspicuous even when looked at from a distance. In Scarlet Gem, another of these summer-blooming Chrysanthemums, the flowers are of a bright brick red, of medium size, and well formed. In habit it is dwarf, and later in the season the colour gets brighter, but it never becomes what one would call scarlet. Of Jardin des Plantes there are both white and yellow varieties, and both are similar in character, very dwarf and compact. The flowers of these are large, well-formed, and produced in profusion. For cutting purposes the white variety should be grown extensively. A kind bearing the name of Delphine Caboche has small flowers, of a rosy-purple colour, with petals flat and blistered, which gives them a peculiar appearance. It is a neat, dwarf, very free-flowering variety. These are the best at present in flower in a collection consisting of some thirty varieties. P.

CULTURE OF DISA GRANDIFLORA.

SELDOM is this fine terrestrial Orchid seen in cultivation in anything like perfection, a fact doubtless owing to attempting to grow it under unnatural conditions. The prevalent fault is growing it in too much heat, for, seeing that it inhabits lofty elevations of the Table Mountain at the Cape, it will withstand quite as low a temperature as any cool climate Orchid. The finest specimens of it that I have seen were growing, in company with Sarracenias and other North American bog plants, in a house with a northern aspect, shaded from too much sunshine and well ventilated all the year, with the temperature in winter frequently falling to 40°. Such a house I think best adapted for its successful culture. The compost I use for potting consists of equal parts of good fibry peat and chopped live Sphagnum Moss, with the addition of a small quantity of sharp white sand and broken charcoal. Some cultivators mix manure with the compost, but, as it invariably contains worms or their germs, I prefer using weak liquid manure when the plants are in vigorous health. The pots should be thoroughly drained and a layer of live Moss chopped fine should be laid on the surface of the soil, as when growing it absorbs moisture plentifully and gives it off when necessary to the plant. Small plants of this Disa may readily be procured, and should not at first be over-potted, but as the roots show themselves at the outside of the ball a liberal shift should be given, as it is through allowing the plants to become pot-bound or lack moisture that they prematurely throw up flower-spikes, which are, in most cases, very small. In the course of the season offshoots will be formed at the top of the tuber, which, when rooted, should be taken off and grown on. Good single specimens should be in 12-in. pots, with spikes 3 ft. high, and with from six to twelve large flowers on each spike. In the case of imported plants, they should, when first received, be potted in the above-named compost, kept rather dry, and gradually inured to moisture, and the rooted offshoots should be taken off, leaving one only. This Orchid is very subject to thrips, which especially attack the axils of the leaves; but they must be kept down by the free use of some insecticide. Established plants commence to make growth about October, from which time until the end of the flowering season, which is from May to July, they should have a copious supply of water, but I find that setting the pots in pans of water is injurious to them. Frequent syringings should also be given in warm weather, to keep the atmosphere cool and damp, as in their native habitat they are subject to dense mists, &c. After flowering they should have a short rest by withholding water for about two months, but must not be allowed to become very dry. There are several varieties, which differ from the type either in size of the blossoms or in the intensity of colour. The variety superba is considered the best. The variety Barrelli is a very fine form with the colours much more defined and brighter than the type, but it is, I fear, now extremely rare in cultivation. It was introduced a few years since by Mr. Bull. Disas may be raised from seeds, and many fine varieties have thus beeen obtained; but though this may be carried out in a shorter time than with the majority of Orchids, it is, nevertheless, a very slow process.
W.

ROSES AT SLOUGH.

THE weather in this neighbourhood this year has been anything but favourable for Roses, at least, as far as the blooms are concerned, and Mr. Turner has hitherto been unable to cut Roses in quantity for exhibition this season. The plants themselves, however, appear to have been benefited by the weather, for their growth is remarkably strong, and a good autumn bloom may be expected. Roses on the Manetti stock are unusually late this season, being just now arriving at their best. Dwarf Roses on the seedling Brier do not succeed here so well as on the Manetti; at least it is more difficult to get them to take. They make admirable, compact, and bushy plants for pot culture, but Roses on this stock will always probably be more expensive than those on other stocks. Mr. Turner has this year a rich collection of new Roses, many of which have yet to be tried another year before their merits can be decided. Harrison Weir, which is doing well both as standards and dwarf plants, is considered to be one of the best kinds ever raised at Slough. Penelope Mayo is also in good bloom, and the same may be said of Dr. Sewell and Mrs. Harry Turner, together with many other very promising kinds. Reds, whites, pinks, and other colours among seedlings are all kept in separate groups. Such as are likely to prove good are kept, and others are destroyed or disposed of in mixed collections for the decoration of semi-wild places. Maréchal Niel on walls has not done so well this season as in previous years, owing to its blossoms having been nipped in spring, but good blooms will no doubt be produced in autumn. Star of Waltham does well here in hot summers, but in cold ones its blooms do not open well. François Michelon in long rows is well furnished with bright pink blossoms, and La France, in the shape of dwarf plants, was, when we saw it, a mass of flowers. Dean of Windsor, a good new garden Rose, has flowers of a bright red colour, and borne in profusion; indeed, at the time of our visit, the plants were bearing a second crop, the result of cutting off the early blooms and part of the shoots. When the present flowers are over the plants will be again cut back in order to induce them to bloom in the autumn. S.

Scented-leaved Pelargoniums.—Being a lover of this species of Pelargoniums, and remembering the interest which I used to feel n Mr. Saunders' fine collection of them at Reigate, I naturally fee afraid that the rage for colour and showy flowers will drive my old favourites out of cultivation. They, however, deserve a place in all gardens, if not on account of their flowers, for their various and pleasant odours, a quality almost lost in the plants which attract the attention of the Pelargonium Society. Some of the Cape Pelargoniums rank amongst the best of scented plants, and for that reason they are most useful in bouquets. P. Radula, miscalled the Oak-leaf, is now and then used for this purpose, but it is not the best scented form. The following are some of the best, viz., the lemon-scented P. crispum, an erect-growing, compact kind; P. odoratissimum, a very strong, pleasantly-scented plant, dwarf and trailing; P. fragrans, nutmeg-scented, dwarf and glaucous; P. tomentosum, peppermint-scented, very strong and pleasant as regards odour; P. scabrum, lemon-scented, a good shrubby plant; P. citriodorum, a strongly lemon-scented sort, and a compact grower. We have also P. glutinosum, as good a fly-catcher as any Dionæa, but I always noticed that it did best when deprived of such luxuries. As bracket plants, for those who care for variety, I would select P. flavum, which has foliage finely cut, like that of a Fern, and pendent; and P. filipendulifolium, also a good kind for such a purpose. For those who are fond of studying varieties of foliage, I know of no genus more interesting in that respect than the Pelargonium. Some of its species also have tuberous stems or roots, like those of the Carrot, while others are clothed with spines almost like a Cereus; others, again, have foliage resembling that of the False Acacia, Vine, Oak, Fern, Nasturtium, Celery, and Oxalis. Variation of foliage is a subject not, in my opinion, sufficiently studied; flowers alone appear to absorb the attention of most people. It is an ascertained fact that we get the worst flowers from the most ragged and undefined foliaged plants, at least, in the case of the Pelargonium, as, for instance, in P. triste; but if we go to P. tricolor or P. alatum, we get neat foliage and good flowers.—J. Croucher, *Sudbury House, Hammersmith.*

LIFTING AND RE-PLANTING LILIES.

In "Dunedin's" criticism (see page 92) of my communication (see p. 62) on the good growth, in a heavy soil, of Lilium excelsum and others, he states that "L. excelsum is a Lily that will grow well treated the same as the white Lily." It was my wish to make this fact more generally known to amateurs like myself that induced me to write on the subject. "Dunedin," however, goes on to say, "But both it and the white Lily will grow and bloom much better if lifted and replanted early every year in well manured fresh soil. This is also a preventive to the leaves withering and dropping off, as they are apt to do before the plant has done blooming;" also, "the flowers of L. excelsum are from one to six, but sometimes up to a dozen." How can the former part of this statement be proved? So far as my case is concerned, instead of L. excelsum only giving "from one to six, but sometimes up to a dozen" blooms, the four stems show now the remains of 37 flowers, and besides this several had been cut for decorative purposes. The strongest stem yielded fourteen flowers, and the leaves are still perfectly fresh and green. From Chislehurst, where the soil is light sandy loam, comes the same good account of L. auratum without removal for certainly three years. Do not these facts go to prove that we ought to select the kinds of Lilies which will do really well in certain localities and soils, and, by avoiding those that disappear, render the annual removal of the bulbs, described by "Dunedin" as "work only for a very careful man," quite unnecessary? I of course agree with "Dunedin" that the four stems of L. excelsum have sprung from four separate bulbs, and I am content to leave them where they are until the four have become forty. "Dunedin" ought to bear in mind that the annual removal of the bulbs, though possible where Lilies are grown by themselves, becomes almost impossible where the clumps are in the mixed borders or shrubberies. For myself, as long as the result is so satisfactory, I prefer to be guilty of what is in "Dunedin's" eyes such a heinous offence, viz., "Letting well alone." A. K.

Eastcott Cottage, Pinner.

Billardiera longiflora Hardy.—Few shrubs are more effective, for the greenhouse or against an outside wall, than this beautiful evergreen trailer. It has long, slender branches thickly clothed with small dark green, lance-shaped leaves. In spring it is profusely studded with long, blue, bell-shaped flowers, which are succeeded by as many indigo-blue berries, about the size of Hazel nuts, which hang on all the winter. It is a native of Van Diemen's Land. It seems strange that it is not more frequently seen in gardens than it is, as it has been introduced a long time, is of easy propagation, and is perfectly hardy in the neighbourhood of London if planted against a wall.—A.

NOTES OF THE WEEK.

Edelweiss.—A good deal of mystery is made of this plant in the newspapers, and even some horticultural contemporaries announce its flowering, as if that were rare. But anyone who knows anything of the hardy plant collections in the country, past or present, knows its flowering is not rare, and its culture not difficult in any way, even as a border plant on sandy soils.

Tuberous Begonias as Basket Plants.—A number of the new race of tuberous Begonias have peculiar value as basket plants, or for growing in any way, so that their stems and blossoms may hang down gracefully, as is their natural habit. We noticed some baskets of them in Mr. Laing's collection in the Stanstead Park Nurseries, Forest Hill, with the branches drooping for quite 18 in., and laden with huge Fuchsia-like blooms. Specially grown and selected, the results would be more remarkable. Nothing could exceed the beauty of these plants—the foliage, picturesque drooping habit of the stems, and brilliant flowers being each in their way admirable.

Clematises and Ivy.—Ivy-clad rocks, roots, or mounds are much improved by having some of the stronger growing Clematises of the Jackmanni type planted sufficiently near them to allow them to ramble at will over the Ivy. In summer the Clematises make a fine show, whilst in winter the Ivy, which is left green and uninjured, in some measure protects the buds of the Clematis from cold, wind, and frost. The light-flowered kinds are the most effective, blue flowers not showing themselves off to such advantage on a green background, but such colours may be introduced among the lighter ones with advantage.

Torenia Bailloni.—We notice that this remarkable species has been passed over by the Floral Committee at South Kensington. Had it been the one hundred and seventeenth recorded form of a common Fern it would of course have received a first-class certificate.

Veronica Hendersoni.—We have received from Messrs. E. G. Henderson a handsome herbaceous Speedwell bearing this name, and furnished with long spikes of flowers of an intense purplish-blue. It is said to be a native of Japan.

The Sea Heath (Frankenia lævis).—I saw the other day, at Kew, a patch nearly 6 ft. square of this beautiful British seashore plant, profusely studded with tiny pink blossoms amongst the Heath-like foliage. It is growing in one of the driest parts of the Gardens, and therefore for an exposed part of the rock garden it is well adapted.—A.

Dicentra eximia.—This plant is little grown in private gardens, and even in nurseries it is not so common as it might be. It looks well isolated in the herbaceous border or as an edging to shrubberies. It flowers from May till September, or even longer, and its finely-cut foliage may be used effectively among cut flowers.

Ceanothus Gloire de Versailles.—A large plant of this Ceanothus covers a wall in Mr. Turner's nursery at Slough, and is one of the most attractive objects in the way of wall plants which we have seen for a long time. Its branchlets are allowed to droop loosely from the main shoots, and each is furnished with large branching trusses of beautiful mauve-coloured blossoms, almost equal in size and appearance to those of a Lilac. This Ceanothus is a strong grower, and if its shoots are cut back after the flowers drop they will push fresh spray, which will soon bear another crop of blossoms. Such wall shrubs as this might be planted more largely than they are with advantage.

The Rosy Snowflake (Leucojum roseum).—The prettiest hardy bulb in flower in the Kew collection at the present time is this rare little gem. Its blossoms, which are about the size of Snowdrops, are unaccompanied by leaves, and are borne on slender stalks about 4 in. high, in the same nodding way as in the case of Snowdrops. The name roseum is probably taken from the flower-stalk and the membranous leaf on it, which are of a red colour, but it does not affect the snowy whiteness of the flower, except at the point of attachment to the stalk. Like most of its congeners, this Snowflake is a native of South Europe, and delights in a sunny border in a light soil.—A.

Hardy Plants at Tooting.—A fine effect in the way of hardy flowers may now be seen in Mr. Parker's nursery. A piece of ground is parted off into sections, some of which are planted as follows:—First, there is a line of white Phlox The Queen, supported on each side by the brilliant scarlet spikes of Gladiolus Brenchleyensis; on either side of these are two lines of a lilac Phlox named Madame Billy; next comes a line of a dwarf deep rosy-crimson Phlox coccinea, the whole being edged with a broad band of blue Violas. Another fine effect is made with dwarf plants of the white-leaved Acers, among which are planted alternately Delphinium formosum and Belladonna, edged with purple Violas. Lines of Yuccas in full flower, alternating with plants of the Globe Thistle, supported on each side with thick lines of Lythrum Salicaria roseum superbum, have also a fine effect. Planting in lines is, of course, sometimes necessary in nurseries, but in private gardens such forms of planting are but in few cases advisable. Such arrangements, however, as those just alluded to serve to show what grand effects may be made in our flower gardens without having recourse to tender subjects, which require endless labour and care all through the winter, and even in summer their beauty is but short-lived.

Berry-bearing Plants.—Two of the handsomest of these just now are Actæa spicata (the common Baneberry) and A. spicata rubra, an American variety of it. Our plants of the latter, though small, are covered with large bunches of coral-like berries, which are very conspicuous.—P., *Hale Farm Nurseries, Tottenham.*

Pentstemon heterophyllus.—This blue-flowered Pentstemon is now in bloom in Messrs. Rollisson's nursery, Tooting. Many seedling Pentstemons of an attractive character have of late years been raised, but none of them possess the colour of this species. For hybridising purposes one would think it would be invaluable.

Alocasia Jenningsi.—This, which by many is called Caladium Jenningsi, is one of the best of plants for table decoration. Its leaves are round, green, and conspicuously blotched with black. A good plant of it can be accommodated in a 6-in. pot, and it is a kind well worth growing for the purpose just alluded to.

Gladiolus Saundersi.—This is one of the brightest and best of the dwarf Gladioli, and good groups of it may now be found finely in flower at Mr. Parker's. It was figured in The Garden, Vol. XII., p. 64.

Œnothera speciosa.—This is a white-flowered species and one of the best of the Evening Primroses. It grows to the height of 2 ft., and bears an abundance of large showy blossoms.

Exotic Bulbous Plants at Tooting.—A fine collection of the white-flowered Nægelia amabilis and other coloured varieties, together with Tydæas, Achimenes, and Gesneras, is now in flower in Messrs. Rollisson's nursery. Achimenes and Gesneras most people grow, but the other plants just alluded to are comparatively little grown, although they are so easy to cultivate and so attractive when in bloom.

Calandrinia nitida.—This is very brilliant in the open ground at Tottenham just now. Its flowers are bright rosy-purple and produced in profusion.—P.

Buddlea globosa.—This is grown in pots in the Pine-apple Nursery, and in spring they are plunged in the ground where it is desired the plants should bloom. Thus treated, we saw plants of it in this nursery a short time ago covered with golden-yellow button-like blossoms. It is a common shrub in many districts, but not in or near London.

Crinum Mackenni.—The finest plant of this Crinum (hitherto known under the name of C. ornatum africanum) which we have ever seen is now in flower in the large conservatory at Pine-apple Place. Its bulb close to the soil measures 26 in. in circumference, and it is furnished with a massive stem and handsome leaves. The flower-spike at the base measures 4½ in. round and is 3 ft. long, surmounted by no fewer than eighteen large pink blossoms and unexpanded buds.

Cattleya Leopoldi.—A specimen of this Orchid in Mr. Williams' nursery at Holloway is an attractive object. It bears nearly fifty large blossoms with chocolate and green-spotted petals which contrast strikingly with the brilliant purple lip. As a rule, this Orchid is not so great a favourite as some others, but when seen in such fine condition as the plant just alluded to it is both attractive and distinct, and lasts in bloom for a long time.

Clematis lanuginosa.—This, one of the oldest of the hardy large-flowering Clematises, and the origin of numbers of valuable hybrids, is still one of the best for covering walls or pillars. We lately saw a fine plant of it in the Slough nurseries. It was growing in a soil not much better than gravel, and was trained between two glass houses, and its masses of large, mauve-coloured blossoms could be seen a long distance off. It has been in flower for several weeks past, and will, in all probability, keep in that state until late in the autumn.

Seedling Picotees at Slough.—These have been lately very attractive. Out of 250 plants raised by Mr. Turner only a few bad flowers occurred amongst them. They are throughout robust in growth and very floriferous, and are well adapted either for conservatory decoration or for open border culture. They vary in colour from almost pure white through several shades of yellow, and some are edged with bright orange-scarlet. The names of some of the best of them were given in our report (see p. 96) of the National Carnation and Picotee Society's show. They are grown in 7-in. or 8-in. pots, and at the time of our visit many of them bore from eighteen to twenty large and showy blossoms.

Tuberous Begonias.—The principal feature of next Tuesday's meeting at South Kensington will be a fine display of tuberous Begonias from Chiswick, and also from some of the leading nurserymen.

Clianthus Dampieri in the Open Ground.—That the chief reason why people do not succeed in growing this plant satisfactorily is that they treat it too kindly and give it too much heat there can be no doubt. We lately saw a plant of it in the Pine-apple Nursery which, whilst grown indoors, was anything but healthy, but which, when plunged in a half-shady place out-of-doors in June, began to grow freely, and is now bearing several trusses of flowers.

The Kew Gardens Defence Association contemplate asking Parliament to sanction the formation of a public School of Botany at Kew, so as to make Kew a teaching centre for botany and its allied sciences. Lectures open to all, somewhat after the fashion of those in the Garden of Plants, Paris, is, we apprehend, what they contemplate.

French Bouquets.—Mr. Fish devotes a long article to denouncing the Paris way of making bouquets, and prays "that Covent Garden artistes," as he calls them, may be sent over to deliver the French from the ugliness of their nosegays. Admitting at once the vast superiority of Covent Garden in the matter of bouquets, we confess, however, we prefer to see a little variety, and think we should be none the worse if each country had a different way of arranging flowers. In like manner we think it is a great evil that so many countries try to imitate French cookery instead of making the best of their own.

Lythrum Salicaria roseum superbum.—This fine hardy plant is now in flower in the herbaceous collections near London. Grown in deep, moist soil, its flower-spikes are from 2 ft. to 3 ft. long, and of a bright rose colour. It is well worth growing by the sides of lakes or in marshy land. It is easily and rapidly increased by means of cuttings, which soon make good flowering specimens. Isolated plants of it in good soil make well-shaped bushes 3 ft. or 4 ft. high and as much through, a way in which they look better than when planted closely in rows.

Seedling Begonias.—These, like Cinerarias and Primulas, are now becoming so good, and the varieties from which seed is saved so superior to those in existence a few years ago, that few people will require to purchase named sorts. A packet of seeds will produce hundreds of plants, which will bloom in six or eight months from the time of sowing, and yield kinds in many instances equal to named varieties. We lately saw a large batch of seedlings in the open air in Messrs. Lee's nursery, Isleworth, yielding abundance of varied and brilliantly-coloured blossoms.

Hyacinthus candicans.—This is now in full flower in our nursery, and is the admiration of all who see it. We have a large bed of it bordered with Gladiolus Brenchleyensis, and the pure white of the numerous flowers of the Hyacinth, gracefully arranged on stems 3 ft. and more in height, contrasts strikingly with the intense red of the Gladiolus, which is just the proper height to make a good edging for the taller Hyacinth. This is an arrangement which we can recommend; and both plants rank amongst the best for the summer decoration of our gardens.—E. H. Krelage & Son, *Haarlem.*

Professor Asa Gray.—We are pleased to learn that at the last meeting of the French Academy of Science, held on July 29, Prof. Asa Gray, the well-known American botanist, was elected corresponding member of the botanical section of that learned body by thirty-two votes out of forty. Mr. Charles Darwin, who was the other candidate, only polled five votes. Although, of course, we should have been glad if the honour had fallen on our own countryman, we most cordially congratulate Professor Asa Gray on the well-earned distinction conferred on him, a sentiment in which we are perfectly sure that his unsuccessful rival will join most heartily. It will be seen by this that if one wants to consider the feelings of all, and particularly those of M. Decaisne and the gentlemen who compose the French Academy of Science, it is not well to do too much. Professor Gray, however, is also an indefatigable worker in the cause of science.—C. W. Quin.

The Royal Horticultural Society has fixed its meetings for 1879 as follows: January 14, February 11, March 11 and 25, April 8 and 22, May 13 and 27, June 10 and 24, July 8 and 22, August 12 and 26, September 16, October 14, November 18, and December 16. The great summer show will be held on May 27, 28, 29, and 30; the Rose show and the show of the Pelargonium Society on June 24.

NOTES FROM KEW.

Hardy Shrubs.—In dry, warm spots Bæckia virgata makes a lovely wall plant, and will succeed well, even without any protection, during the winter months. This charming shrub has small, glossy leaves, and its graceful sprays, covered with small, white, Myrtle-like flowers, are very elegant. Another member of the Myrtle family, and, like the last-named, a native of New Holland, is Myrtus tenuifolia. Under the same conditions as Bæckia virgata, it makes a pretty object, the drooping branchlets bearing an abundance of pale rose-tinted blossoms. Hypericum patulum, a fine Japanese kind (a coloured plate of which was issued with The Garden of Sept. 22, 1877) is at present very showy, and proves itself to be one of the best of the St. John's-worts.

Hardy Aquatics.—Villarsia ovata, from the Cape of Good Hope, is much smaller than, and totally different in habit from, V. nymphæoides; the flowers are orange-yellow, and are fringed inside somewhat like those of the Bog Bean (Menyanthes trifoliata) of our English ponds. The double Arrow-head (Sagittaria sagittifolia fl.-pl.) is a desirable water plant, and for general decorative purposes superior to the single form. One of the most elegant of aquatics is Thalia dealbata, from South Carolina; associated with stately, Canna-like, glaucous foliage, are tall, graceful panicles of purple flowers. Provided the root-stalk of this beautiful plant be kept far enough under water, so as never to be actually frozen, it will pass through our winters uninjured.

Hardy Herbaceous Plants.—A recent introduction from Australia, Lobelia tenuior, is a lovely plant; it grows about 6 in. high, and the bright blue, white-throated blossoms are ¾ in. in diameter. For crossing with smaller-flowered kinds this will prove very useful; altogether, it is a useful addition to our flower garden favourites. A Cape bulb, Montbretia laxifolia, with salmon-coloured flowers on stems 1 ft. or more in height, is very pretty, though not so showy as some of the other members of the genus; it is a rare plant in cultivation. Perhaps still rarer is Arnebia echioides, from the Alps of Caucasia and Armenia; the large, bright, golden-yellow flowers have five deep purple spots at the throat. This very distinct and attractive Borage-wort, though generally believed to be difficult to cultivate, does very well on a piece of rockwork in a rather shaded position at Kew. Centaurea leucophæa, a kind recently distributed under the name of C. rutæfolia, has pure white flowers; the leaves somewhat resemble those of C. ragusina, and, like it, the young plants of C. leucophæa would probably do well for bedding purposes. Campanula peregrina, a new ally of, but more beautiful than, the rare Primrose-leaved Bell-flower (C. primulæfolia), grows 2 ft. high, and bears a large number of almost saucer-shaped blue blossoms, each with a central ring of black-purple. The Cape of Good Hope is, according to Paxton, the native country of C. peregrina, whilst C. primulæfolia is said to come from Portugal. C. Waldsteiniana, a little rock plant about 3 in. high, has small grey-green leaves and nearly flat blue flowers. Two kinds of Gladiolus, G. aureo-purpurea and G. Saundersi, are very desirable bulbs; the first has yellow blossoms, the lower portions being conspicuously marked with deep red-purple; G. Saundersi has spikes of deep scarlet flowers—a coloured plate of this magnificent Irid appeared with The Garden of July 21, 1877. Hyacinthus candicans is a noble Cape bulb, which has proved perfectly hardy in the open border; the Kew specimens, which are only medium-sized ones, are between 3 ft. and 4 ft. high; the numerous large, drooping, white, bell-shaped blossoms are very handsome. Two of the most distinct and striking of the various sorts of Asclepias now to be seen at Kew are A. Douglasi and A. speciosa; both have the same large umbels of pinkish flowers, but the first, which comes from the western side of the Rocky Mountains, has hairy leaves and grows 2 ft. high, whilst A. speciosa attains double that height, and has glossy green leaves. Gentiana septemfida, about the same size, has heads of bright sky-blue, white-throated blossoms, and is extremely handsome. Dracocephalum canescens, one of the finest of all the Labiates at present in bloom, grows little more than 1 ft. high, and is one mass of purple flowers. Calamintha glabella, a lovely little plant from the United States, grows only about 2 in. or 3 in. high, and forms a compact patch covered with reddish-pink blossoms; the whole plant is highly fragrant. Nicandra physaloides, a pretty annual with light green leaves and pale blue, white-throated, trumpet-shaped flowers, is an easily cultivated and desirable plant, growing about 1½ ft. high. Hypericum tomentosum, an oriental species with small woolly leaves and bright yellow flowers, is a distinct and very attractive St. John's-wort about 1 ft. in height. Malvastrum grossulariæfolium is a lovely Mallow, of prostrate habit, with reddish-orange flowers, which are freely produced. M. capensis, a more upright, branched, shrubby kind, has small leaves and rose-coloured blossoms, bearing a crimson blotch at the base of each petal.

Greenhouse Plants.—Mesembryanthemum falciforme is a neat-habited, shrubby kind with large rose-coloured flowers; M. amœnum is a half-shrubby sort with large blossoms nearly the same colour as those of the last named; and M. lepidum, a larger-growing kind of shrubby habit, has white flowers. Virgilia capensis, a native of the Cape of Good Hope, is a fine conservatory bush; it has elegant pinnate leaves and long-stalked racemes of light rose-coloured blossoms. A very charming Sea Lavender is Statice rhytidolepis, a shrub 3 ft. or 4 ft. high, with small tongue-shaped leaves and numerous bright rosy-red flowers.—†.

Ornithogalum revolutum.—In general appearance this resembles O. thyrsoides, but it differs from it in coming later into flower, in having longer foliage, in being generally more robust, and in the individual flowers being larger. The spike or thyrse, too, is larger and not so compact. At Tottenham it is now beautifully in flower in pots. On some of the spikes I counted eighteen fully-expanded flowers and as many more in a bud state. The flowers are of a glistening white colour with a conspicuous yellowish-brown centre. The spikes are erect, about 15 in. in height, and when two or three bulbs are potted together they form very attractive objects.—P.

Paris Universal Exhibition.—During the last fortnight M. Jules Vallerand, nurseryman, Bois de Colombes, Asnières, near Paris, has kept in one of the houses, not far from Mr. Wills' exhibition, a beautiful collection of Gloxinias, consisting of 250 plants and comprising 200 varieties. All the old good and well-known plants belonging to this genus were to be seen in this assemblage, and also a considerable number of seedlings, some not yet named. Amongst them the following were the best, viz., G. Prince de Galles, Madame Hubert, Charme de Lutèce, No. 367 (not named yet), and Bergmani, the largest-flowered kind. The same house likewise contained a large number of double Pelargoniums staged by M. Poirier.—B.

Androsace sarmentosa.—Like many other woolly-leaved Alpines, this beautiful Himalayan species is very difficult to keep alive through our cold and damp winters. For the last two winters I have taken the precaution to place a piece of glass in a slanting position about 6 in. above the plant, and I find that this effectually preserves it. Care should also be taken to put finely broken sandstone immediately under the rosettes of leaves and over the surface of the soil to keep every part of the plant, except the roots, from being in contact with the soil. I find this plan much better than that of lifting the plants in autumn, as it invariably injures them, or using bell-glasses, which too much confine them. The plants that I treated in the above manner are now in the most robust health, and have flowered profusely.—W.

Two Santolinas.—I am much charmed with Santolina incana. I do not know what is going on in our public parks, but this is a plant which ought to be conspicuous in all town gardens, for it will thrive under conditions the most unfavourable to growth. It is a truly beautiful plant, silvery-white, dense, and compact, perfectly hardy, and, perhaps, too easily propagated. It may be clipped into any shape easier than Box. As a white bedding plant it is certain to supersede many already used for that purpose, as it may be kept from 3 in. to 1 ft. in height. It makes fine blocks or masses of white in bold patterns, and would give a tone and character to any garden. It is well adapted for subduing a blaze of high colour, such as that produced by scarlet Pelargoniums, and as an edging it would give a finish to masses or beds of Rhododendrons or Azaleas. Santolina alpina, a totally different plant, is very unlike a Santolina; it grows flat on the ground (as if it had been rolled every day), scarcely exceeding 1 in. in height, and is of a silvery-grey colour; no plant could be better adapted for carpeting or as a groundwork to higher-coloured plants. It would also make excellent bands or divisional lines in geometric gardening, and it might in many cases be substituted for Grass edgings, as it would never require mowing. It is a true hardy perennial, and all that would be required when used for any of the above purposes would be to clip off the globular flower-heads. It is known in some nurseries as Artemisia alpina, an error with which, I believe, I have had something to do.—Thos. Williams, *Ormskirk.*

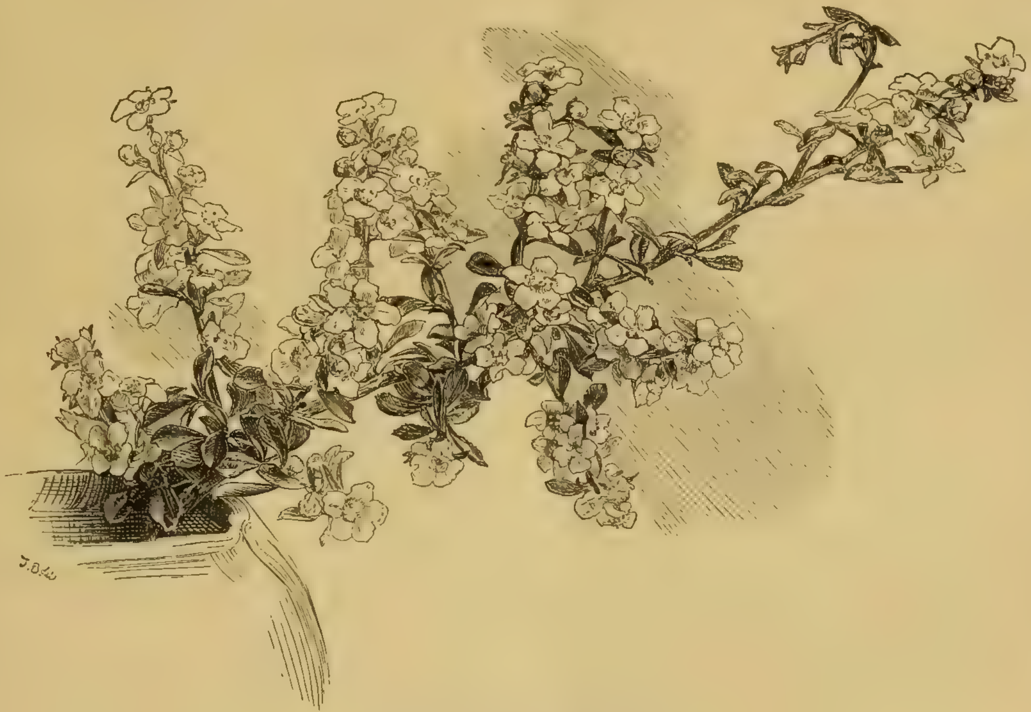
The Single Dahlias.—A correspondent of ours, who is growing and collecting the species of Dahlia, will be greatly obliged for information as to new or rare species sent to him through The Garden.

Botanical Discovery.—Country papers, at a loss for something new, in the absence of the big Gooseberry or the gigantic Mushroom, announce that Mr. Murray, head gardener at Peniarth, and an under gardener, found, the other day, a plant of Platycerium alcicorne, growing upon the Cader Idris mountain chain. Some years since persons from the gardens at Penrhyn Castle are said to have found the same Fern at Llyn Idwal.

TREES AND SHRUBS.

ESCALLONIA PHILLIPIANA.

This is a very distinct species, reminding one more of a Leptospermum than an Escallonia, the flowers being white and the petals sessile. It is one of Pearce's introductions for Messrs. Veitch, and is a native of Valdivia, South America. Phillipi first described it under the name of angustifolia, but that name being previously occupied in the genus, it became necessary to substitute another in its place. It is a very free flowering shrub, growing from 2 ft. to 6 ft. high in its native country. It thrives in a sandy soil, and it is said to be hardy in the neighbourhood of London.



Branchlet of Escallonia Phillipiana.

GOLDEN CONIFERS.

These constitute a valuable class of trees for the adornment of woods, pleasure grounds, and lawns, and even for the flower garden they may be made to play a prominent part, particularly in winter and spring. The following are the best varieties in cultivation :—

Retinospora obtusa aurea.—This is a free-growing tree with a drooping, graceful habit; the colour of its foliage is deep golden. It is hardly possible to conceive a more beautiful object than a well-grown specimen of this growing on a Grassy bank or lawn. I have never known it to suffer in any way from the extremes of severe frost or burning sun.

R. plumosa aurea.—This forms a striking contrast to the preceding, having a somewhat pyramidal and upright habit of growth, clothed with pale golden, soft, feathery foliage. It is quite hardy, and can endure a burning sun without being scorched, but no doubt it will succeed best in a cool and rather shady situation.

R. tetragona aurea.—This is comparatively a new variety, rich golden in colour, with apparently an upright habit of growth; its foliage is peculiarly neat and pretty. It was planted out in the nurseries here last autumn, and stood the winter without the slightest injury; the late scorching hot weather has put it severely to the test, and it has come through the ordeal, I may almost say, without injury, for the little that is burnt is hardly perceptible. This, no doubt, when it has become cheaper and more plentiful, will be in great demand.

Cupressus Lawsoniana lutea.—This is by far the best of the golden varieties of Lawson Cypress. It is a free grower, with good form and graceful habit. Its colour is deep golden, which becomes deeper and more intensified as the summer advances, and it is an established fact that its foliage never becomes singed from the effects of a scorching sun. It is, in short, an invaluable ornamental plant.

Juniperus chinensis aurea.—Amongst Junipers this is undoubtedly a great acquisition; its colour is soft golden-yellow. It is very hardy, and has stood the test of a burning sun this summer without being singed in the least degree.

Biota orientalis aurea.—This is an old and well-known variety. Its young shoots when in a growing state are of a beautiful golden colour, changing in autumn and winter to bright green. It forms a globular bush, dense and compact in habit.

B. o. semperaurescens.—This is an improvement on the last-mentioned variety, on account of its retaining a beautiful bright golden colour throughout the year. Its habit is different from that of B. o. aurea, having more of the oblong form.

B. o. elegantissima.—This is a bright gem amongst Conifers, and unsurpassed for elegant beauty. It forms a lovely golden-yellow pyramidal dwarf tree, which is hardy, pretty, neat, and distinct.

Thuja occidentalis aurea.—This is a good rich golden variety of the common Arbor-vitæ, and one well worth cultivating. It is of recent introduction, and only small plants of it can therefore be had in the trade.

Chamæcyparis sphæroidea aurea.—The young shoots on the current season's growth of this neat and elegant Conifer are bright golden in autumn and winter. It is quite hardy.

Arthrotaxis selaginoides (Donniana).—The young shoots of this singular-looking Tasmanian tree are tipped with yellow when growing in spring and summer, changing in autumn and winter to green. It is but a slow grower.

Pinus sylvestris aurea.—This is a unique variety; the colour of its foliage in winter is rich golden, changing in spring to dark green, the colour of the type, which it retains until the latter end of autumn, when it begins to assume its golden hue. It need hardly be said that it is perfectly hardy.

Juniperus chinensis aurea.—Amongst Junipers this is a real acquisition; its colour is pale golden, and it has stood the test of burning summers without harm. This is a very distinct and beautiful variety, and well deserves a place in every collection.

Taxus baccata aurea.—This golden variety of the common Yew is too well known to need description; suffice it to say that it is always brilliant and effective. There are several other varieties more or less golden and variegated, all of which are good and useful ornamental plants, and deserve to be extensively planted.

Taxus fastigiata aurea.—This is a golden variety of the Irish Yew; it is an effective plant and a valuable addition to golden-foliaged trees. It forms a striking contrast, as regards colour, to the sombre type when planted near or alternately with it on a lawn or terrace. George Berry.

Longleat.

HINTS ABOUT TRANSPLANTING.

Mulching is excellent for newly-planted trees, but the work is often wastefully or injudiciously done. I saw the other day a pile of horse manure, enough to manure a square rod, heaped around a young Apple tree set this spring. The chances are that this tree will die, and "killed by kindness," might appropriately be written on its label. Even if so much manure does no harm, it is a wasteful mode of applying it. What the tree needs is just enough shade over the roots to keep the soil around them moist, but not to exclude air and light entirely. A little straw, or, better still, green Grass spread over the surface will do all that mulching can do. Manure is not needed. It takes some time for the roots of a newly-set tree to recover from the shock caused by transplanting. Until they begin growing they are so much inert matter, full of sap, and ready to rot at the slightest provocation. Manure in such cases can only do harm. And yet thousands of trees are immersed in a hole filled with manure and rotting sods, and then the wonder is that they do not grow. I would not plant an orchard on a newly-turned Clover sod, as it is sure to be filled with decaying vegetable matter. Another frequent mistake about transplanting is that newly-set trees or other plants are benefited by heavy applications of water either on the surface or at the roots. For the first twenty-four hours after setting water is an injury, and cold (as it is sure to be in early spring) is especially so. The soil should be fairly moist, nothing more. After the roots have started to grow, water, if warm, may be beneficial. So far as possible, the leaves of the plant or the leaves and trunk of a tree should be moist. This will check evaporation and thus stimulate root growth. Great care, however, should be taken not to wet the surface of the ground, especially if the soil be heavy. If a crust forms on the surface to exclude light and air, root growth ceases until the crust is broken. This explains why hoeing often benefits newly-planted trees much more than watering them. A little water applied frequently to the leaves of plants or trees is far better than applying large quantities to the roots. If from neglect in mulching it becomes necessary to water the roots the surface should be removed and warm water turned in; then cover with dry earth and afterwards mulch. Do not trouble the roots, except to frequently hoe the surface of the ground until growth has commenced. The starting of the buds is a pretty sure sign that root growth either has commenced or soon will do so. In transplanting young trees it is best to cut away the top vigorously, provided it be done at the time of planting or soon after. When growth has commenced pruning checks the roots and injures the tree. I have had the best success with young trees in cutting back to from three to six buds, enough to form a head according to the variety. Each bud would push strongly and become a vigorous branch the first season.—W. J. F., in "Cultivator and Country Gentleman."

AVENUE TREES.

Mistakes are not unfrequently made in the choice of these. For example, one can hardly admire an avenue bounded on both sides by rows of formal-looking Araucarias. It is a good ornamental tree for some situations, but it is not an avenue tree. Besides, the danger of its being injured by frost and its habit of losing its bottom branches by disease is another good reason for not employing it for such purposes. But it is used for avenues in some places; hence the allusion to it here. The Wellingtonia and the Deodar are not open to the same objections. The first, where it grows well, and is not cut up by winds, which completely ruin its appearance, is a grand avenue tree. It grows fast, too, and soon becomes a striking object. 6-ft. trees, planted in good soil, soon grow to a large size. It should, however, be planted well back from the drive—50 ft. or more at least. There should also be room between the trees. If this be not seen to, the avenue will be destitute of breadth and freedom, and will look like a narrow alley when the trees grow up. In a great number of cases this matter is lost sight of in planting avenues. The trees are planted not many feet from the side of the road, and soon their branches are encroaching upon it and have to be lopped back, which completely spoils the effect. One of the grandest approaches we ever saw to a fine mansion was a broad avenue, with the trees thrown back nearly 100 ft. on each side, with Grass between them and the road. The trees were not formally planted, however, but just formed the margin of the wood. When the Deodar is planted along an avenue, the trees should not be more than 20 ft. or 30 ft. from the road. It is a tree which grows slowly, and never gets very lofty, and it looks diminutive if placed too far back. A grand palatial mansion requires a correspondingly broad and spacious approach, furnished with trees of noble height and character; but such an approach would look ridiculous if it led to nothing better than an unpretentious villa. In the latter case the Deodar will be found a very suitable tree to plant, also Cupressus Lawsoniana, and others. In some parts, where the more tender Pines do not thrive well, the common Spruce will be found a good subject, but only in moist localities; and Pinus Nordmanniana is better still—in fact, it almost rivals the Wellingtonia in height, and exceeds it in breadth of base, while it is an excellent grower. What applies to the Pine tribe of course applies also to deciduous trees, whether planted in lines along a drive or in masses. Chef.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hollies in Terrace Vases.—I noticed lately in a garden in Suffolk what appears to me to be a novel and excellent idea. Some large vases on the terrace in front of the house, such as we usually see filled with Geraniums, &c., were planted with variegated Hollies, which are allowed to grow loosely. The effect was very good, the pretty variegation giving them a bright appearance. Where flowers are not required or cared for, might not many evergreens, such as the Phillyrea, Osmanthus, and others of slow-growing or dwarf habit be similarly utilised?—Robert Osborn, *Fulham.*

Berberis pallida.—This species, which is to be met with only very rarely in our gardens, where it ought to be found much more frequently, is known in some establishments under the name of Berberis Hookeri. It is a native of Mexico, where it is found in different parts of the country, more especially in the neighbourhood of Real del Monte, where it was discovered in 1831 by Mr. John Bull, who brought the seed to Europe. Some years later Hartweg re-discovered it near Cardonal and Zimapan. It somewhat resembles another species which, like itself, has almost disappeared from our gardens, where it was at one time found under the name of Berberis macrophylla. The Berberis pallida (B. Hookeri, Hort.) is hardy in the climate of Paris, although it suffers slightly during very severe winters. It has been described and figured by Van Houtte in his "Flore des Serres," vol. vii., p. 23, and by Lindley in Paxton's "Flower Garden." The latter author describes it as having its fruit grouped in large hanging panicles, the berries being of a dark greenish-purple, the effect of which is sufficiently pretty to the eye, but their very pronounced acidity is out of keeping with their pleasing appearance.—C. W. Quin.

Scarcity of Laburnum Bloom.—I notice the remark of "J. G." (see Vol. XIII., p. 560) about the scarcity of Laburnum blossoms this year, and the enquiry whether this failure is local or has the same thing been noted in other places. Upon reading this it occurred to me that our Laburnums, 10 ft. to 20 ft. high, and marvels of beauty every year with their pendent golden trusses, similar to, and contrasting so well with the white and purple Wistarias which grow near by, had not been noticed this season, and upon further enquiry I learned that our large trees yielded scarcely a single flower. It certainly is remarkable that the failure should extend to both continents. These failures are unaccountable. This year every Apple tree was loaded with bloom, but the Pears are almost an entire failure—the first time for twenty years, yet the autumn was pleasant and warm and the winter unusually mild. Why should the Pear alone of all our fruit trees fail? My theory is, that they have borne two successive and enormous crops (1876 and 1877) and now want a year's rest.—C. M. Hovey, *Boston, Mass.*

Double Wistaria sinensis.—This is a very vigorous and hardy plant, and its general appearance reminds one of that of the ordinary species, Wistaria sinensis. The bark is of a dark reddish colour and lightly speckled; the leaves are of a long oval shape, and when very young are downy, but soon become smooth and shining, and are borne upon a stalk ½ in. long. The flowers are sweet smelling and full, closely resembling double Violets in their general appearance. They hang in long bunches on a short, violet-red stalk, and bear a strong likeness to those of the common species; they are of a deep lilac or rather of a lilac-violet colour; the petals are numerous and irregular, some being larger than the others, and look as if they had been slit. This kind, which has just flowered for the first time in France in the gardens of MM. Transon Frères, horticulturists at Orleans, is a native of Japan, whence it was introduced into America by Mr. Parkman, a member of the Boston Society of Horticulture, in 1869. Specimens may be procured from MM. Transon.—C. W. Quin.

Bronze Filbert, and other Coloured-leaved Plants.—This free-growing plant, which is very effective in shrubberies, has large leaves of a deep bronze colour. We lately saw a number of bushes of it in the Slough nurseries, where there were also growing fine dwarf, highly-coloured bushes of the Golden Elder and the white-leaved Acer Negundo variegatum. A striking effect could easily be produced by associating these three plants in woodland scenery. In order to have them good in colour it is necessary to keep them well pruned, especially the Golden Elder, which should be cut down nearly to the ground every year; thus treated, its foliage comes large and of a brilliant golden colour, but if allowed to grow to a large size it reverts to the original green-leaved kind.—C. S.

Ancient Cedars at Gunnersbury.—One would scarcely believe, when standing beneath the shade of these ancient-looking trees by the lake at Gunnersbury, that such a lovely spot could be almost within earshot of the bustle and turmoil of the London streets; and one cannot help admiring the way in which the venerable aspect of the trees is preserved by the evident care that has been bestowed in holding them together by means of chains, iron bands, or props. Many of the trees overhanging the lake are carefully shored up from the water-side. I need scarcely remark how much nobler an aspect is imparted to an estate by the preservation of old trees, that no amount of money could procure or transplant, than by the too often commonplace adornments one sees imported into otherwise good gardens. I may also remark that the Ivy here plays an important part in garnishing old trees and forming canopies of verdure overhead, and also carpets on the ground; for I observed that the too often bare spaces under such trees as the Cedar of Lebanon were here covered with a dense growth of Ivy.—J. G.

Propagation of Xanthoceras.—M. Baillon, in the "Journal of the Société d'Horticulture," gives an account of the Xanthoceras. When first this very beautiful tree was introduced into Europe it was propagated with extreme slowness and difficulty, owing to our arboriculturists being ignorant of the right means to take to secure its easy fructification. Of late years, however, it has been known to flower very readily, but in order to produce a supply of fruit we must have recourse to artificial fertilisation, taking care to choose the proper flowers for the purpose. This is no easy matter, for some of the flowers are males by abortion, especially those at the ends of the branches. Flowers of this kind are, of course, useless for the purpose, and only those with perfect pistils should be chosen for the operation. Last year a large number of the seeds of the Xanthoceras were successfully gathered and sown. It has also been found, on the other hand, that this species is easily propagated by cuttings from the roots. In this respect it may be placed on the same category with certain woody subjects with pinnate leaves, such as the Cedrela sinensis, the Ailantus, &c., which likewise possess the power of being multiplied by root cuttings. M. Baillon says that one of the oldest known specimens of this tree is to be found in the south of Russia, where, according to a letter received by that gentleman, this tree has existed for the last thirty years. With us the Xanthoceras rarely grows to the height of 6 ft. or 7 ft.; but in its natural habitat (Mongolia) it far exceeds these dimensions, and figures as a beautiful tree.—C. W. Quin.

THE FLOWER GARDEN.

YELLOW-FLOWERED BEDDING PLANTS.

I have been much pleased this season with two circular beds of Calliopsis coronata and Drummondi. The colour of the latter is bright orange with a dark disc. Coronata is a bright canary-yellow with a spotted disc less dense in colour than Drummondi. Both are very free flowering and showy; the individual flowers measure nearly 3 in. across, and are mounted singly on wiry stems, which yield to the motion of the air, and thus obviate that tiresome rigidity which, in the case of many closely-cropped or pinched plants, suggests the idea of daubs of paint on canvas. These two forms of Calliopsis belong to a genus of hardy annuals introduced from America nearly half a century ago, and good masses of them were common thirty years since; but of late, when flower gardening became so formal, all plants with a free, flowing outline were discarded, no matter how effective they might be. From this cause, many exceedingly showy and useful plants have well-nigh disappeared, as, for instance, the Sages—such as Salvia patens and S. fulgens—and many other plants equally bright and showy, but which could not easily be made to assume a low formal outline without losing most of their flowers and, consequently, their beauty. The seeds of Calliopsis may be sown on the beds where they are intended to bloom the first week in April, covering very lightly with dry soil, and, as soon as large enough, they must be thinned out to 6 in. or 8 in. apart. Timely thinning and frequent earth stirring are most important details of culture in connection with these plants, and it is advisable to pick out the points of the leaders or main shoots once or twice, a practice which keeps the growth bushy and robust, and allows the plants to get well established before flowering and seed bearing commences. As far as possible the seed-pods should be picked or cut off early in August and onwards, although in this respect there will be less labour required than would be necessary in the case of Pelargoniums or Calceolarias. I have said the seeds may be sown in the open air, but as they are light and scaly I prefer sowing them and all similar seeds in boxes under glass in a cold frame. The soil and the season are often, early in April, very ungenial, and many good seeds may perish from that cause; but under glass shelters there is no fear of failure, and the young plants can be planted out in the beds early in May 6 in. or so apart. The soil should be good and deep, and if, during very dry, hot weather, they are well watered twice a week, there will be less time consumed in picking off seeds, and the flowers will be larger and more numerous in consequence. E. Hobday.

TIME OF BLOOMING OF LILIUM CANDIDUM.

I believe that "Dunedin" is in the main correct in his remarks on Lilies, but he does not write for everybody when he says that Lilium candidum or "The White Lily has done blooming early in July." Here, in one of the later districts of South Yorkshire, this Lily seldom flowers earlier than the middle of July, and that, too, on a south border. We have it still in flower (July 29), and had it not been for the late warm weather it would have been later still. Manifestly, therefore, it would not have been wise for us to have taken it up and re-planted it two months before September, as "Dunedin" recommends. No doubt our experience is the same as that of others in late districts in the north. Our bulbs of L. candidum and the scarlet Martagon were planted five years ago. The first year they did not flower, the second they did, the third year they flowered well, and last year, the fourth season, they were very fine, and created quite a display in our herbaceous borders. Last November, while making some fresh plantations in another part of the ground, all were taken up, when it was found that the bulbs had accumulated to clumps the size of one's head, or larger; these were divided and re-planted, and, though some of them have flowered this year, they are by no means so fine as usual. Our bulbs, I may remark, were planted very carefully at first, but later than "Dunedin" recommends, and I think, according to his showing, they should have flowered best the second year, but they did not, but continued to increase in strength and floriferousness till the fourth year. Nor do I agree with him in thinking that "very little science tells us that the first season is the only one in which the Lily can have a sufficiency of fresh and sweet food." Surely the Lily can be fed as successfully as any other plant of the herbaceous kind. J. S. W.

Flowers in Churchyards.—A good example of the use of Convolvulus sepium for enclosed grounds may be seen in Kensington Churchyard, where it was planted apparently at the time when the burying ground was closed. It now runs all over the place, climbing up the shrubs beautifully. Some of the weeds there, however, require more oversight, as, for instance, the Œnothera, which is now dying off and scattering its seeds by the bushel. It is desirable that more judgment should be shown in the selection of plants for burying grounds, so that their neatness should not be wholly destroyed by annuals. Surely a flower list of perennial plants might be made out, and the sorts that flower in succession distributed over the place in such a manner as to keep the general aspect fresh and cheerful with blossom from April to October. This graveyard now offers a curious contrast to the Duchess of Teck's garden a few yards distant. *Chacun à son goût!* [The great Bindweed (Calystegia dahurica) is a much finer plant than our common white Bindweed.]

The Climbing Fumitory (Adlumia cirrhosa).—Than this it would be difficult to find a more elegant object amongst hardy plants. It possesses several good properties; it is a rapid grower, and soon covers the object against which it is placed. Its Maiden-hair Fern-like leaves are borne in great profusion on the slender, twining stems, and the blossoms which are white and about ½ in. long, are also borne very freely; altogether, making it a most desirable plant. There is also a variety of it with purple flowers (A. cirrhosa purpurea), which if grown with the type, forms a pleasing contrast. It is properly a biennial; that is, it makes growth one year, flowers the next, and then dies, but it bears seed so profusely—which comes up year after year without being sown—that it may well claim to be perennial. It is a native of Canada and Carolina, and was formerly known under the name of Corydalis fungosa. Although it has been introduced about a century, it is not so frequently seen in gardens as it deserves to be.—A.

Spiræas.—S. Lindleyana, which is a native of the hills of Northern India, thrives well in an exposed situation here, grows about 5 ft. high, flowers freely, and is a very ornamental plant on the lawn. S. japonica, now called Hoteia japonica, is the best known of its class, being so extensively used for decorative purposes when forced. S. palmata is a truly handsome species. It does not, however, get a good name as a forcer, but in the herbaceous border it is far more showy and perfect than the Hoteia japonica, which, in consequence of coming so early into flower, gets injured by winds and frost; the latter is seen to best perfection when forced. S. Ulmaria fl.-pl. is a double variety of the common Meadow Sweet, and very much superior to it in appearance. The plant is a strong grower and free flowerer, and should be in every collection. It is a good companion to the pink S. palmata. S. Filipendula fl.-pl. and S. japonica variegata are also attractive kinds.—J. S., *Sheffield.*

Badly-designed Rockwork.—One of the worst rock gardens which I have yet seen is that in the gardens of the Preston Nursery Company. It consists of large square flat stones, placed like shelves one above the other, with vacant spaces between them filled with soil in which it would be impossible for plants to grow, as neither light, rain, nor sunshine could ever reach them. On the top of these stones are planted Scarlet Pelargoniums, Golden Pyrethrums, and similar subjects, the effect of which any one can easily imagine. With Nature in her most picturesque form so close at hand to teach what should be done, it is astonishing how any one could have constructed such an hideous piece of work. Nowhere, perhaps, in England could be found a more charmingly situated spot than these gardens occupy. Nature has added unsparingly to their attractions. They contain situations suitable for Alpine or rock gardens, bog gardens, and wild gardens, and the latter is the true name for the gardens as they now exist, for comparatively little has been done, except planting a few Sweet Williams and unsuitable Roses about the banks and jungles. The taller-growing native Ferns flourish here amazingly, and so do some of the wild Spiræas. If some of the hundreds of free-growing hardy plants which we now possess were judiciously planted, and fine-leaved trees and shrubs introduced among those which now exist, this might be made one of the most attractive gardens in England, and one which every one who loves scenery and semi-wild gardening would be pleased to see.—C. S.

Exhibiting Carnations.—The exhibition of the Carnation and Picotee Society, which took place the other day at South Kensington, was very successful regarded from the point of view of the professed florist. The several classes were well represented, and the skill of the cultivator, as well as the beauty of form and colour of the flowers, were well displayed. No attempt was made to break from the traditional mode of exhibiting these flowers, a tradition so venerable and so religiously acted up to that it would appear as if the height of excellence as regards practice had been reached, and that long experience had shown that no improvement could be made. At the risk of being considered rash heretics, we venture to dispute the assumed excellence of the present mode of exhibiting these flowers. Is it necessary, for instance, that the flowers, no matter what their colour may be, should be throttled by a stiff collar of dead white cardboard, projecting all round the flower for some distance? Assuming that some support of this kind is necessary to prevent the effect of the bursting of the calyx, is it necessary that such support should be so conspicuous? The effect is often distressing, often ludicrous, and nearly always detrimental to the lighter colours of the flowers themselves. The card might be so curtailed in its proportions as not to be objectionable, and it might be of some light warm neutral tint which should enhance, not detract from, the colour of the flower.—"Gardeners' Chronicle." [It is high time to protest against the way in which these lovely flowers are made hideous at shows. A bed of seedlings left alone has a better effect than all the collared Carnations ever seen. We do not now wish to quarrel with the "florist" for his ideal, and let him lay down all the rules and standards of perfection which he likes. What we have to deplore is the fact that, after ages of effort and not a little vaunting of what has been done, the ideal flower is only to be seen in a deep paper collar, with all its delicate beauty of varied petal destroyed, flattened, or picked out. Each exhibitor is armed with a small series of instruments, reminding one of a dentist's collection, wherewith the said exhibitor extracts small petals, flattens others, and goes through a variety of operations to force the flower to assume for an hour or two before its death a shape which he calls perfect. All this one might tolerate if at the same time these beautiful flowers could be seen as they grow. This is all we ask for. A show of Carnations and Picotees well grown in pots, and allowed to bloom without mutilation or objectionable collars, would be a charming novelty, and we should see in which way the flowers look best. We believe the usual way of showing them is that calculated to exhibit to the least possible advantage the beauty and grace which Carnations and Picotees naturally possess.]

Helichrysums as Biennials.—These well-known showy flowers, so useful for drying as Everlastings, are generally treated as annuals, and, unless exceptionally well managed by sowing early under glass, the season is so far advanced before they commence flowering, that the best period for laying on the brightest colours is lost, and early frosts find the plants just approaching their best, as regards flower-heads. During mild winters I have on several occasions found a good number of these Everlastings to stand the winter, and to be the most continuous flowerers next year even in the driest and hottest of summers. The Helichrysum is particularly adapted for a background plant on dry borders. I would recommend a few pans or boxes to be sown with it, where they can be slightly protected during winter, and, if planted out early in April, they would have a chance of producing a good crop of flowers for drying.—G.

Delphiniums from Seed.—The fine race of Delphiniums which now adorn our gardens through the summer months with a variety of rich purples and blues, colours such as no other plants, hardy or tender, can rival, are easily raised in great variety from seed. If the flower-stems are cut down promptly after blooming, they flower again in autumn. Rich soil, or a place in the choice border is not even necessary for them, though they are worthy of both. They thrive freely without attention or staking, either in shrubberies or copses, and also well in open situations. We say so much for them now through seeing a square of them in Messrs. Carter's seed farm the other day—all seedling plants, and yet including many beautiful kinds and a great variety. They were in bloom in a very exposed spot, rather close together, the stems tall, erect, and unbroken, without any stakes being used.

Miles' Spiral Mignonette.—Great improvement has of late years been effected as regards the habit of growth, size, and colour of Mignonette, while, at the same time, the agreeable perfume which has so long rendered ordinary Mignonette so valuable has been retained. Amongst varieties with highly coloured or red flowers, the sort known as the Victoria Mignonette is possibly the best, while the spiral variety is without doubt the best of all the varieties having light-coloured flowers. As a pot plant I have as yet had no experience with it, but in the open air it is most satisfactory, producing spikes of bloom from 15 in. to 18 in. in length, and this without any attention in the way of pinching the side shoots or extra treatment of any kind. This result, too, has been obtained on very light soil, and during an exceedingly unfavourable season, on account of long-continued drought. The seed was sown in pans about the beginning of April, and as the few packets I obtained did not contain a great number of seeds, the plants were potted singly into 3-in. pots, and ultimately planted in the open border.—P. Grieve, *Culford.*

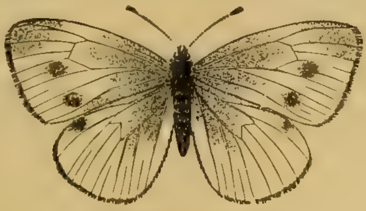
White Lilies and Rabbits.—Of white Lilies I have had a magnificent show, but not in the woods; although they promised so well there, the rabbits got a taste of them, and eat every flower, stalk, and leaf which they could find. They are evidently so fond of the white Lily, that it is useless planting them out in woods, unless they are wired round. Another showy plant to which they are partial is the oriental Poppy; they devour it like Clover; Mulgedium they do not touch, nor the Comfreys, nor Bocconias.—G. Berry, *Longleat.*

GARDEN DESTROYERS.

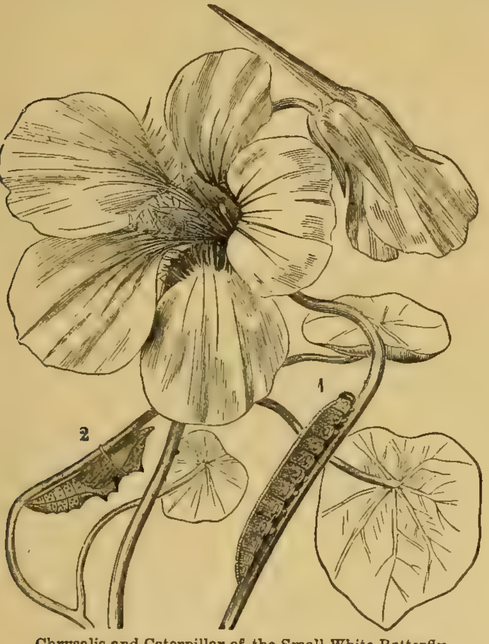
PIERIS RAPI.

(THE SMALL WHITE OR TURNIP BUTTERFLY.)

This insect is very similar to P. brassicæ not only in form and colour, but in its habits and economy. It is, however, considerably smaller. The male measures across the wings when they are fully extended about 2 in.; the female is somewhat larger. The wings are white in both sexes, dusted with black at their bases, the upper wings having the tips and the front margins black, more or less sprinkled with white. The lower wings have a blackish spot near the upper margin. On each of the upper wings of the female, about two-thirds of the distance from the base to the side margin, there are also two black spots, one above the other, the lower of which is sometimes hardly visible. The under sides of the upper wings are white, with yellowish tips and with black spots similar to those on the upper side. The lower wings are yellow beneath in both sexes. The body and thorax are black above and yellowish-white underneath.



Small White Butterfly.



Chrysalis and Caterpillar of the Small White Butterfly.

The head and antennæ are black; the latter are slender and slightly clubbed. The eggs much resemble those of the White Cabbage Butterfly, but they are laid singly instead of in clusters on the under sides of various cruciferous plants, Mignonette, Nasturtiums, &c. The caterpillars are hatched early in June, and when fully grown are about 1 in. long, seldom longer, and so thickly covered with fine hairs as to be quite velvety; they are dull green in colour, with three yellow stripes, one down the middle of the back and one on each side. The chrysalides are of a light pinkish-brown or pale gray colour sprinkled with fine black dots, and are generally found in some sheltered place, such as on posts or palings, near the plants on which the caterpillars have fed. This butterfly is even more common than P. brassicæ, and is generally distributed throughout the United Kingdom. It may be found from May till October.

The caterpillars are very destructive in gardens, as they feed voraciously on Turnips, Cabbages, and other cruciferous plants, Nasturtiums, and Mignonette; this latter plant it sometimes entirely strips of its leaves. They have been found feeding on the Weeping Willow. The natural enemies of this species are the same as those of P. brassicæ. There seems to be no way of destroying this insect, except by catching the butterflies, picking the caterpillars off the plants infested, and killing them and the chrysalides wherever they can be found. Any chrysalis, however, of a brown appearance should be spared, as it is sure to contain the larvæ or grubs of ichneumons or other insects which are parasitic on the caterpillars of white butterflies. Very small yellow cocoons found on leaves and dead caterpillars are often mistaken for the eggs of insects, but they should never be destroyed, as they are the chrysalides of small insects belonging to the Ichneumonidæ, which kill great numbers of caterpillars, and thus render good service to the gardener. S. G. S.

Phloxes.—These rank next to Larkspurs amongst herbaceous plants, and afford many pleasing shades of colour; between the early and late kinds, the suffruticosa and decussata types, a fine display of flowers may be maintained throughout the summer and autumn. Phloxes require the same general treatment as Larkspurs, and succeed anywhere. It is needless to propagate them from seed, except to raise new sorts. After two seasons young shoots push from the base of the flowering stems, and these may be used for cuttings, which should be made about 3 in. long, and inserted in a sandy compost, under a hand-light and shaded. They will soon strike root, and should then be potted off or planted out.—S. J.

Ornamental Gardens at Rochester, U.S.—In a notice of the visits made by the members of the recent Nurserymen's Convention at Rochester, we (" Country Gentleman ") alluded to the examination of the grounds of Ellwanger & Barry and others. A few additional statements of what they saw may not be out of place. The home grounds at these celebrated nurseries are widely known as affording an excellent specimen of landscape gardening, several acres of lawn in perfect condition being bordered with beautiful and rare specimens of native and exotic trees, and occasionally ornamented with plantations of shrubs and beds of blooming herbaceous plants. A bed of Pæonies, 30 ft. in diameter, containing many of the best varieties, was in full bloom. Several variegated and rainbow beds, made of plants with coloured foliage, were variously interspersed through the grounds. The Roses were in perfection. Among the trees were fine specimens of purple Beech, weeping Birches of several sorts, many rare Conifers, and a number of Magnolias. We measured a flower on a tree of Magnolia macrophylla, and found it to be 20 in. across. Their Sequoia trees are about 40 ft. high, and last winter was the first in which they were not at all affected with the cold; in previous winters the shoots were more or less browned. The Japanese Maples, of which there were many specimens, attracted much attention. This firm still keeps up its great nursery to its full extent, occupying now 650 acres with trees. The flower farm of Mr. James Vick, in the eastern suburbs of the city, has many acres devoted exclusively to flowers, including a vast collection of bulbs. The immense beds of Pansies, at the time above mentioned, were kept in the richest bloom by the city water, which was constantly supplied through hose-pipes, the fine rosed terminus of which, held high on standards, showered the water in mist over the beds. By actual estimate, we found that the flowers in these beds of Pansies—which were of every imaginable shade and variegation—were literally numbered by millions. Nothing does more than fine specimens of ornamental planting towards stimulating a correct taste in the details for carrying it out, and Rochester is largely indebted for its many fine places in the city and suburbs, to Messrs. Ellwanger & Barry and to Mr. Vick in floriculture, as well as to others, by the examples which they have afforded, and by the plants and trees which they have introduced.

Caterpillars Attacking the Oak.—When on a visit lately to a friend in the neighbourhood of Sheffield we took a drive one day to Wharncliffe Crags, where one of the finest views in Yorkshire is to be had. On passing through an Oak wood some 14 miles in extent, part of the old Sherwood Forest, we were struck with the blighted appearance of the trees, and, upon examination, we found the mischief to be the work of caterpillars. I would scarcely have believed it had I not found them in hundreds upon the trees. Through the kindness of Lord Wharncliffe this wood and drive are thrown open to the public three days a week. —A. McIntosh, *Paxton House.*

THE INDOOR GARDEN.

LUCULIA GRATISSIMA AS A WALL PLANT.

In this fine evergreen shrub are combined vigorous growth, a remarkably free habit of flowering, delicious fragrance, and a disposition to produce blooms through the autumn —a combination of good properties surpassed by few plants in cultivation. Considering the length of time it has been known in this country—over half a century—it seems strange that it is not more generally met with than it is at present, a circumstance that can only be accounted for by the fact of its requiring to be grown in an intermediate heat, *i.e.*, between that of an ordinary greenhouse and a stove, a temperature which many plant growers have not the means of affording, and which is the more to be regretted as the non-presence of such precludes the possibility of growing many of the very finest plants we have, that will not succeed well without more warmth than that afforded by a greenhouse, and yet cannot bear so high a range of temperature as many of the occupants of the stove, wherein, if kept, as is the case with this plant, growth is so much over-excited, that they appear never to have time to flower, or, if they do, the bloom is of a meagre, puny description. With sufficient room this plant attains a considerable size, reaching, where desired, a height of 10 ft. or 12 ft. when trained, so as to occupy the end or back wall of the house in which it is located. For this latter purpose there are few plants more suitable, and in such positions its cymes of pinkish flowers are seen to the best advantage. It is equally suitable for training round a pillar, or it can be grown in a pot or tub, trained bush fashion, to which its natural habit adapts it; but, although from its free disposition to flower, it will bloom in a small state, yet to have the plant in a condition such as to exhibit its full beauty when grown in the latter way, it should neither be stinted for root-room nor the head kept too much cut in. It is easily propagated by cuttings of the half-ripened wood, which should be put in during the early spring—say the beginning of March—for with this, as with most stove subjects, it is of importance to start sufficiently early to admit of the plants attaining size and strength before autumn. Insert the cuttings singly in small pots, drained, and half-filled with a mixture of sandy loam and peat, the upper portion being sand. Keep them moist, cover with a bell-glass, and let them have a night temperature of from 60° to 65°. They will root in a few weeks; then gradually admit air until the propagating glasses can be dispensed with altogether, when the young plants should be placed where they will receive plenty of light. As soon as growth commences pinch out the points, so as to induce the formation of several shoots near the base.

When the pots are fairly filled with roots shift at once into others 4 in. larger, using a mixture of two-thirds loam to one-third of peat; a liberal sprinkling of sand is indispensable, as, being free-growing, the plants require a plentiful application of water during the summer season. When they have got fairly established, a night temperature of 65° through the spring and summer will be sufficient, with a rise in the day proportionate to the state of the weather, for the plant, being a native of the high, comparatively cool, yet humid country of Nepaul, will do better in such a temperature than if warmer. A little shade in the middle of the day during very bright weather will be an advantage. Syringe freely in the afternoons, in order to keep the atmosphere moist. So managed, the young plants will make rapid growth, and may be expected to require more root room by the beginning of July, when give a 3-in. or 4-in. shift, according to the greater or less root progress that has been made. This liberal amount of pot room is for such as it is deemed desirable to get on to a considerable size without loss of time; yet if a portion of the stock be required to produce some flowers in the autumn, they will do so, in which case it will be better not to give them another shift. After potting them again, pinch out the points of the shoots, and continue to treat as already advised until the middle of September, when dispense with the shading, giving more air; but keep on syringing for another month, after which it may be discontinued. A night temperature through the winter of from 46° to 50° will suit the plants, keeping them drier at the root, but on no account withholding moisture, even at this season, to the extent that some plants would bear; for it must always be borne in mind that the moisture-loving nature of these hill-region plants does not in any way change under cultivation, and if ever kept too dry they get into a languid state, which renders them susceptible to the attacks of red spider and other insect pests, which appear to prefer preying upon plant life when under conditions that reduce its vital force. By the middle of March it will be necessary to determine whether the plants are to be turned out or grown in pots; if under the latter system they may have a 3-in. or 4-in. shift, now using the soil in a more lumpy state, if possible containing more fibrous matter. Pot firmly by ramming the new soil well in, which with most plants has the effect of inducing a more bushy habit of growth, with shorter-jointed wood, more disposed for an even production of flowers than the few gross, over-luxuriant shoots generally resulting from light potting. Pinch out the points of any shoots that are taking an undue lead, training the strongest growths out to sticks inserted just within the rims of the pots, leaving the weaker shoots in a more erect position, by which means they will acquire strength to an extent that will more evenly balance the plants. All now required through the summer is to treat as recommended the previous season, giving them liberal applications of water at the root, and syringing freely.

By the beginning of September the plants will push up strongly, and when in bloom they may be removed to a conservatory, kept at a temperature such as is in accordance with their requirements. When the flowering is over they may be moderately shortened back, and kept on through the winter as before, giving them a liberal shift in the spring, and, to still further promote growth, supply them with manure water during the summer. They will this season make fine decorative objects when in bloom, after which treat as previously, giving more root-room in the spring, where space to grow them to a large size is available. This wanting, it is better to discard them after flowering, keeping smaller plants propagated annually to supply their places, which, where the glass accommodation is restricted, will be found the most advisable course. Where intended for planting out, a moderate extent of border must be prepared, sufficiently drained by the presence of 2 in. or 3 in. of broken bricks, pebbles, or anything of a similar character, as well as egress beyond this for the water, as where a considerable space has to be covered with a corresponding amount of root-room, several gallons of water will need to be applied at a time. The plants should be turned out in the spring, just before growth commences; if delayed until later on, some check to the young shoots will follow the necessary disturbance of the roots, which if coiled to any extent round the ball inside the pots should be loosened, so as to direct them into the new soil, which make moderately firm, otherwise the water will pass through it in a way so as to leave the ball dry, a condition essentially opposed to free growth. When preparing the soil if, in addition to sand, a sprinkling of grit, stone, or broken pot shreds is added to it, it will benefit the plants, as I have always noticed that the material in inside borders is more disposed to get into a sour, unhealthy state than when it is fully exposed to the open air. The plants should be spread out to cover the wall or end of the house, as the case may be, so as to furnish the whole properly from the first, as where attention is not paid to this matter the growth is naturally directed upwards, leaving the lower space deficient, a condition which it is afterwards difficult to remedy. Where a pillar has to be clothed, instead of stopping the plants so as to induce their branching out more than requisite, it will be well to allow one or two of the strongest shoots to take the lead in a way to attain the required height, merely pinching the points at intervals that will cause them to sufficiently furnish the space as they progress. L. Pinceana is also a native of Nepaul; this has white flowers sometimes slightly tinged with pink. T. Baines.

Fuchsia aucubæfolia.—This Fuchsia is now seldom seen and is somewhat difficult to obtain. It is, however, well worth attention on account of its large variegated leaves. Its flowers are little inferior to those of many which are grown for their blossoms only, and a good specimen of it is very attractive. I lately saw plants of it in Messrs. Laing & Co.'s nursery at Forest Hill.—S.

POTTING AND DRAINING SIMPLIFIED.

These are the points connected with the culture of plants upon which success may be said to principally depend; the loss that is entailed in garden practice by ignorance on either of them is almost inconceivable. To begin with potting, and dealing chiefly with general principles, we have first to consider the kind of subject we have to deal with—whether it be a strong or a weak grower; whether grown for fruit or flowers, or only for its foliage; whether, also, it is a plant producing strong, thick, fleshy roots, or roots of a small fibrous nature—all of which are conditions more or less affecting the question of potting and composts to be used. Mainly, however, the question in general plant culture is one of loose or firm potting. Formerly, in potting such plants as Heaths and Azaleas, hard potting was carried to extremes; the operator was not content with ramming the soil about the roots with a heavy wooden rammer till it was a mass as hard almost as a brick, and becoming when dry not unlike a brick in texture, but he even introduced stones to help to obstruct the roots still more. Recently, however, more rational practices have prevailed. It is not found in Nature that the plants are usually placed in a rooting medium of such a texture as is here described; and it is found in plant culture that such treatment is neither necessary nor desirable. The effect of too firm potting is that free root action is obstructed; and what is worse, after a while, when the roots do to some extent permeate the soil, it becomes a hard baked ball, almost impervious to water, and without which it shrinks and leaves the sides of the pot, to the great injury of the roots. I have seen Heaths so hard potted that the water would lie for hours on the surface of the pot before it soaked away, and such plants I never saw do any good. The Strawberry is a plant which should be firmly potted, but if the plants are rammed too hard they will never make good ones, as I have proved by experiment.

As a rule, all hard-wooded stove and greenhouse plants require moderately firm potting, but it is difficult to describe clearly in words how firm the soil should be made. It may just be stated that considerably more soil can be pressed into a pot, by dint of finger-and-thumb work, than would be compatible with the necessary porosity; but, as a rule, most good cultivators are satisfied if the compost be just so firm that it will not subside much after potting in the course of the season, and it will be found that not much ramming or squeezing is necessary to secure this end. When firm potting is necessary, the ramming should be chiefly confined to the layer of soil next to the drainage. The worst consequence of loose potting is that the roots soon find their way down amongst the crocks—a thing which should be prevented if possible, for once the best part of the roots get there, they cannot be brought back again without shifting the plant. A good hard seat below the ball of roots is therefore a necessity in most cases, and if that is attended to, it matters little if the soil above is rather loose and open. I have noticed this very frequently. At one time I were taught that pot Vines and Pines could not be potted too loosely to secure a free growth, which may be true, but we found that plants so potted had always the best part of their roots among the drainage by the end of the season, while there would be comparatively few roots near the surface of the ball. By beating about 2 in. of the bottom soil pretty hard, however, and filling in the rest round the roots rather loosely, we find by long experience that rooting in the drainage can be almost wholly prevented, and that the roots push up instead of down, until they quite crowd the surface of the ball, thus presenting excellent facilities for feeding by means of top-dressings.

I have said that something depended upon whether fruit or flowers, or only luxuriant foliage, was the object. It may be observed that what induces a floriferous habit will also induce fruitfulness, and for both the treatment may be the same. It will hardly be disputed, I think, by experienced cultivators that a soil of tolerably fine texture is the best for those subjects which are cultivated for their fruit; but of course something depends upon the species. All stone fruits succeed best in a rather rich soil, but a soil that is permitted to settle of its own accord, not one that is trodden or beaten hard. Apples and Pears succeed in a pretty firm soil, but I believe the finest examples of both are produced from trees that grow in deep and not too hard loam, and in situations, of course, where the wood is ripened annually. At Lord Ducie's, Tortworth Court, I understand all Apple and Pear tree borders were specially prepared and filled in with good loam from the fields, in which the trees were planted, and that garden has long been celebrated for its fine fruit. Instances of successful orchard-house culture also prove that a border of a moderately adhesive texture is best, and in potting such trees one may safely take a lesson from outdoor borders. As regards fruits produced from plants of a herbaceous character, like the Pine before mentioned, or the Plantain, a freer rooting medium is to be recommended. As regards plants grown for their large and fine leaves, it is only necessary to state that the richer and freer the compost they are allowed the better, if light and temperature be afforded according to their wants.

Draining.—On this subject many particular instructions have been given. By some it is considered necessary, when crocking or draining a pot, to arrange the potsherds according to their sizes in the most particular fashion, beginning with pieces of the largest size, and ending with the smallest. In some gardens, indeed, preparing the crocks and draining the pots is nearly a man's work; but it is all utterly useless labour. All that anyone wants is a hammer to break the potsherds, and 1-in., $\frac{1}{2}$-in., or $\frac{1}{4}$-in. sieve. With these a boy may prepare as many crocks in a few hours as will nearly last an entire season. First he has to pound up with the hammer the broken pots, next he has to first put them through the 1-in. sieve, then the $\frac{1}{2}$-in., and lastly the $\frac{1}{4}$-in. one, to shake the dust out of them, and he has then all he needs for particular subjects, from Orchids to Scarlet Pelargoniums. The chief and only point is to provide a clear waterway at the bottom of the pot. To effect this he has first to put in one, two, or three handfuls of the roughest crocks, according to the size of the pot, in the bottom, then a handful of the next size on the top of these, and in very particular cases some of the smaller siftings on the top of all, and on the top a piece of turf or Moss, and the drainage is as safe as it can be made by the most elaborate precautions. In potting very small plants in small pots, and such as require a fair amount of water, drainage is hardly necessary at all, for the evaporation from the sides of the pot (if it be made of unglazed earthenware) is almost more than enough to rob the roots of their moisture as fast as they can conveniently be supplied again. For all common plants, therefore, such as are put in small pots in which they have not to remain long, one crock at the bottom of the pot is quite enough, and I speak from years of experience in the matter.—"Field."

THE GLAZING OF HOTHOUSES.

It has been the aim of horticultural builders for some time back to devise a form of structure that would permit of glazing without putty, and at the same time obviate the necessity of frequent painting, which, as hothouses are built at present, add so largely to the expense of keeping them in repair. It is certainly most desirable to get rid of the outside putty at least, for it is a source of much trouble and expense in keeping the roof in repair. It is the putty far more than the wood which necessitates painting so often, and it also hinders repairs, for when glass is broken, which frequently happens in gardens, the putty has all to be chipped out piecemeal, and the new has to be painted three or four coats again after it has hardened. But even in the best-managed places this work is too frequently neglected, and the putty cracks and leaves the wood, the damp gets in, produces rot and drip, and in the end the ruin of the structure. In going through an extensive garden the other day, and one supposed to be well kept up, the damage through frequent repairs to glass roofs and the after neglect of painting was very apparent. In the case of some of the houses, indeed, the idea of repairs had been given up, and the houses (not very old) were destined to come down when anything was done to them. Any plan, therefore, by which hothouse roofs can be made thoroughly drip-proof without putty, and at the same time strong enough to withstand storms of wind, and close enough in the laps to keep the wind from blowing in, thereby reducing the temperature seriously, will assuredly soon become popular. As yet none of the patented systems of glazing without putty have found much favour among gardeners, as much because of the open laps as anything else. The plan answers well enough for railway stations and sheds, &c., where temperature is no consideration; but in plant structures the windage and loss of heat are too great. This was the fault of "Ayres' Imperishable Hothouses," as Mr. Ayres once told us himself. In calm weather they answered well enough, and at all times the structures looked well; but in windy weather the wind blew through the laps like a hurricane, and the same objection applies to some of the other systems. While in a winter garden at the seaside some time since, which was glazed on one of the puttyless methods, we observed that every puff of wind heaved the panes up so far that one could push a quill under them, and the superintendent told us that during cold weather he could just keep up the necessary temperature by dint of hard firing and an extra consumption of fuel. That it is, however, practicable enough to render such roofs fairly air-tight, we do not doubt. We had an opportunity at the Leeds Horticultural Show the other day of examining Hellewell's new system, and, though we cannot say how the structure may behave in a gale of wind, it seemed to meet the end in view more nearly than anything we have seen yet. The panes are edged with india-rubber pads at the holdfasts, which keep the panes down very closely. We could not insert the thin blade of our penknife under the laps, which is a pretty good test; but in some other cases, as, for example, at the winter garden before mentioned, we could push the haft of a budding knife under the laps and prize the glass up sufficiently almost to admit one's finger. By Hellewell's plan the panes are laid on with their laps from the wind as much as possible—that is, the side laps, which are the most exposed. What we considered the faults of the system were the large size of the panes and the wooden framework, which seems too light; the structure has the appearance of being all glass—no fault, certainly, from a gardener's point of view, but still a proportionately strong framework is indispensable. The glass sides of the house especially needed to be better stayed. Another advantage of the system is that it does away with nearly all outside painting—there are no outside rafters, all the woodwork is inside under the glass, except the gutters, and, of course, the doors and the wooden sides. The system has yet to be fairly tried, however, and we are not recommending the plan here before all others; but we are mistaken if it does not meet with the approval of plant and fruit cultivators. J. S.

—— There is, I imagine, considerable doubt in many people's minds as to the plan of glazing without putty being able to keep out rain and prevent drip equally well as houses glazed on the old-fashioned principle. Having, however, lately had an opportunity of inspecting a little greenhouse glazed without putty, I can confidently state that such structures may be rendered perfectly water-tight without any brickwork or putty at all. The heating apparatus in this case consisted of a large flat lamp, with two burners, for paraffin oil, one burner being sufficient to keep out a moderate amount of frost, and the two together in full play severe frost. Under such conditions was one of the best collections of zonal, double, and Ivy-leaved Pelargoniums that I have ever seen, and that, too, in a house which can be taken to pieces and easily re-erected. J. G.

Lapageria alba.—The flowers of this are so much prized in a cut state for floral decorations, that Mr. Wills is building in his Fulham nursery a house which is to be entirely devoted to it. The house in question is in a north-west aspect, and the plants are to be planted in an outside border, where, with a little protection in winter, a fine crop of flowers may reasonably be expected.

Fuchsia penduliflora.—This is one of the best of Fuchsias for baskets or for training up pillars. It flowers freely, has handsome light green foliage, and its blossoms, which are bright crimson, have tubes 1½ in. to 2 in. in length. It is a hybrid, the result of a cross between two of the old species. Plants of it are now in good flower in the Victoria Nursery, Holloway.—S.

Small Plants of Anthurium Scherzerianum Best.—I find small plants of this better than large ones for decorative purposes. The spathes certainly are smaller, but the quantity of bloom produced even by a small plant is astonishing. This Anthurium is easily grown if potted in soil consisting of Sphagnum and peat, divested of its dust, intermixed with plenty of sandstone about the size of nuts. It should, when well rooted, be given liquid manure occasionally, and care must be taken to see that the drainage is in good condition.—John Clews, *Headfort, Kells, Co. Meath.*

PLATE CXXXIX.

BOUQUET AND FANCY DAHLIAS.

Drawn by Mrs. DUFFIELD.

Bouquet or Pompone Dahlias form quite a different section from the Fancy and Show kinds. They are of Continental origin; and while the plants have the tall growth of ordinary Dahlias, the flowers are much smaller, bearing the same relation to the group of Show and Fancy Dahlias as the Pompone Chrysanthemum does to the large-flowering section. For some time we had only varieties of tall growth, but of late years plants of dwarf and close growth have been obtained, having the same small compact flowers freely produced, and of varied and attractive colours. It is scarcely necessary to give a list of the best varieties, but such catalogues as those of Messrs. E. G. Henderson, Mr. Charles Turner, and others will be found to contain a good selection. The tall-growing varieties are very useful for the centre of a large bed, with the dwarfer-growing forms forming a band round them.

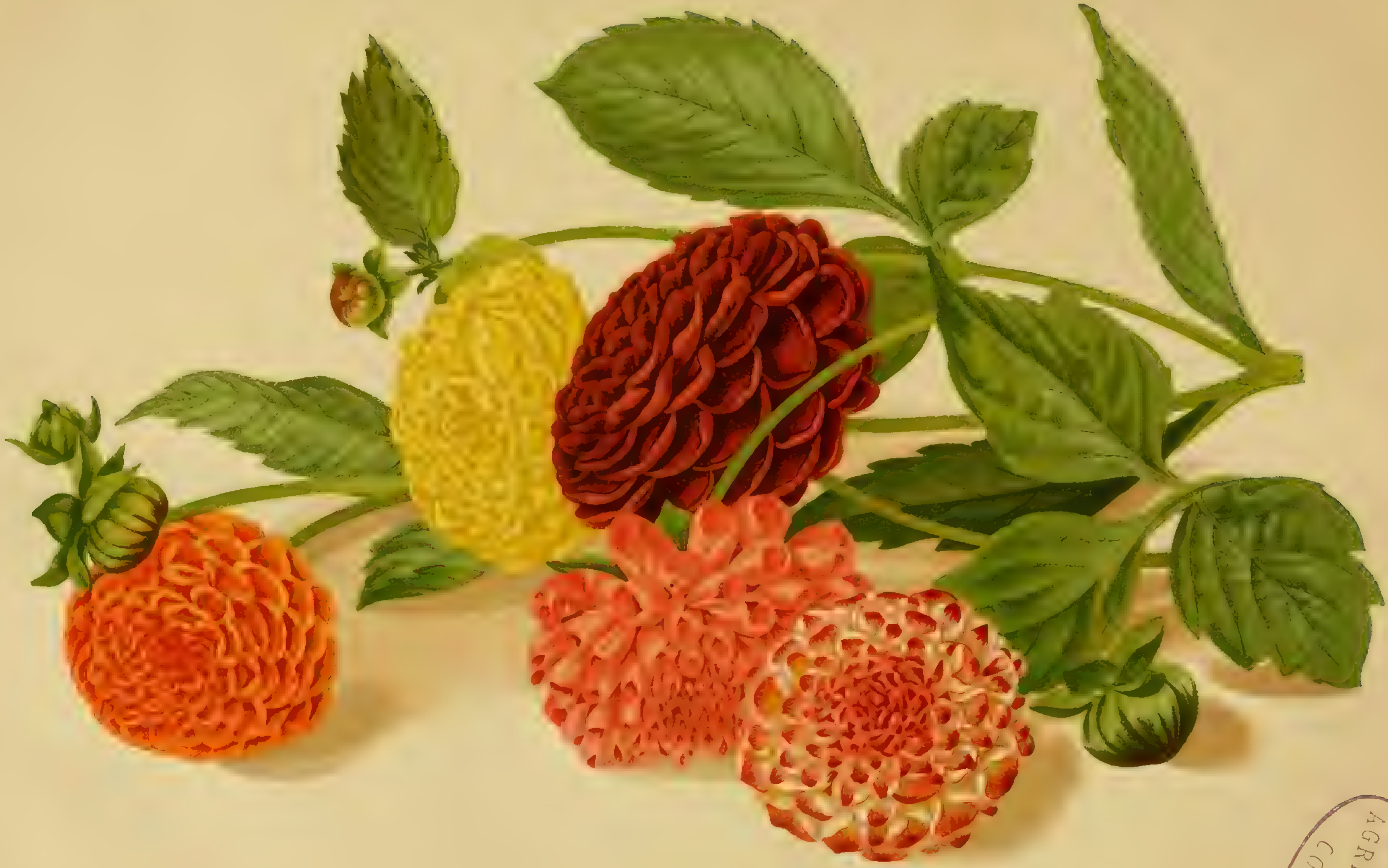
Of the term "Fancy Dahlia," the following definition was given a few years ago: "In the composition of a fancy Dahlia two or more distinct colours are essential. If the variegation be in the form of stripes or flakes, as in the Carnation, this arrangement of colours, whether the light or the dark predominates, is in itself sufficient to constitute the sub-division distinguished as striped fancy Dahlias; but if the variegation consists in the edges or tips of the florets differing from the general or ground colour, then the relative position of the colours determines whether the flower be a fancy one or otherwise. Thus a white, yellow, or any pale variety, edged, tipped, or laced with a dark colour, after the manner of the Picotee, is denominated simply an edged, tipped, or laced Dahlia, but when this disposition of colours is reversed, *i.e.*, when the florets of a dark flower are tipped with a light colour, the variety so marked is termed a tipped fancy Dahlia." At that time the foregoing accurately described what was commonly understood by a fancy Dahlia, but since then the two divisions of show and fancy Dahlias have approached each other so closely that it is sometimes very difficult to classify them with accuracy, and at many country shows edged flowers are admitted to be fancy flowers in contradistinction to those of purely self colours. It frequently happens that fancy Dahlias will revert to a self form, and, when that occurs, the fancy flowers in their true character and the self flowers can be shown as distinct varieties.

There is yet another section of useful Dahlias, viz., the bedding varieties. These are of dwarf growth with unusual free flowering properties, and they are at the same time continuous bloomers. Every batch of seedlings will be certain to produce some of this character.

It is in large gardens that Dahlias come in most serviceable, and when a great number of cut flowers are wanted at the end of the summer and in autumn, Dahlias prove very useful. But to prolong their bloom and floral attractiveness, the plants should be mulched with manure, kept well watered at the roots, and occasionally syringed overhead when the weather is dry; the decaying flowers should also be removed. In this way the cultivator renders substantial assistance to his plants, and they reward his timely attentions by bringing forth flowers in plenty when they are most wanted. D.

[The flowers from which our plate was prepared were supplied from the collections of Messrs. E. G. Henderson, Pine-apple Place.]

The Violet-scented Fern (Nephrodium fragrans).—This North American Fern is one of the few scented kinds which we have, especially amongst the hardy class. It is a small-growing plant with a tuft of much-divided dark green fronds from 6 in. to 9 in. long. It is covered on the upper surface with minute glands which yield a delightful fragrance, much resembling, but superior to, that of Violet blossoms. Like many other good plants, it is rather difficult to manage, but I find it to succeed best in a moist, shady, yet well aired, situation, and it must be guarded against slugs. It likes a compost consisting of peat and leaf-mould, with the addition of a little loam and sand.—W.

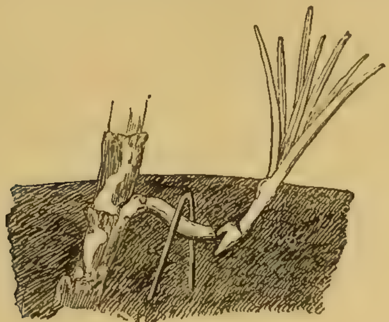


BOUQUET DAHLIAS

MASSACH
AGRICULTU
COLLEGE

PROPAGATING.

Carnations and Picotees.—These are best increased by means of layers put in in August; loosen the surface soil with a trowel, and mix with it a portion of fine garden soil and a little sand; trim off the leaves with a sharp pair of scissors, cut as shown in the annexed figure, and peg the shoot down; then cover with soil, and give a good watering to settle all closely down. If the weather be very dry, give a watering now and then late in the afternoon. In two or three weeks layers thus treated will begin to grow, and in about the second week in September they may be taken up with a trowel and potted either in pairs or singly as required. They should then be placed in a cold frame that can be kept close for a few days, after which air may be gradually given them, and they will soon become established.



Mule Pinks.—These may be increased in autumn by means of the side-shoots, which should be put in as cuttings under hand-lights out of doors, or in spring by getting the plants into warmth and treating them in the same way as Tree Carnations.

Tree Carnations.—The best month for increasing these is the latter end of January. Let cuttings be made of the side shoots that show no sign of flowering, as represented in the annexed illustration. Well drain the pots for their reception; the best and handiest sizes are 4½ in. and 6 in. Let the soil, which should be sifted and thoroughly mixed, consist of equal parts of yellow loam, leaf-mould, and sand; take care to clear it of wireworms, which are little, hard, darkish yellow worms, about 1 in. long; if only one of these be left in a pot it will destroy the whole of the cuttings in a day or two. The soil must be pressed rather firmly into the pots, and sand should be laid on the top; then water and insert the cuttings firmly with a small dibber, give a good watering, and place them on a shelf near the glass in a close house, the temperature of which is about 65°; they must not be covered at all. In three or four weeks they will be well rooted, and fit for potting off. Any new or scarce sorts may also be increased in March by putting the plants in a house in which the temperature is 65° to induce growth. The cuttings may be prepared in the same manner as those just named, but they must be placed in bottom-heat and covered with a bell-glass, occasionally airing and sprinkling with water early in the morning, and shading from the mid-day sun with sheets of paper. H. H.

PROPAGATION OF VERBENAS AND OTHER BEDDING PLANTS.

August is essentially the time for looking over flower garden stock, taking note of such additions or alterations as may with advantage be introduced into the bedding list for another season, and, in case Verbenas are considered worthy of a place in the flower garden, the requisite number of stock plants should be propagated without delay, in order that they may become established before the dull days of winter set in. Many ills, it is true, attend plants that are tenderly nursed and coddled late in the autumn, and especially Verbenas, which are subject to the attacks of mildew and thrips on the first approach of winterly weather, but the remedy by means of which difficulties such as these can be surmounted is early propagation and a liberal course of treatment up to a given time, after which all growth should be thoroughly hardened and ripened. The routine duties connected with autumn propagation are simple enough. First of all, see that your plants are in a fit state from which to take cuttings, and next determine the most convenient plan of propagation, and have all ready before a single cutting is taken off. The propagating frame, if a temporary one, should stand in a comparatively shaded position, and be filled up to 12 in. or 18 in. deep with spent leaves freshened up with short Grass—just enough to generate a gentle warmth, which will accelerate root action and promote a free and steady growth; then have the pots or pans washed clean, crocked and filled up with leaf-mould and sand in the proportion of two-thirds of the former to one of the latter, sprinkle the surface of the soil in the pots or pans with water through a fine rose; then have the cuttings taken off, and while they are being prepared for insertion dew them over with water through a syringe to keep them from flagging. As the process of insertion is being proceeded with, see that every cutting is made fast at its base and not about the middle. Water well, so as to fill in the holes, and place the pans level in the frame already prepared for their reception. No hard and fast line can be laid down as to the atmospheric condition of a propagating frame, so much depends on circumstances, such as the state of the material or that of the weather, but it is a safe principle upon which to act to keep the cutting from flagging from the time when it is severed from its parent till it has formed roots and become an independent plant. This is done by shading and by frequent syringings overhead, which may be reduced gradually as the plants become established.

The next matter to be attended to is transplanting the rooted cuttings into pans of rich soil. In doing this one must be mindful not to compromise or impede their future health by exposing them to influences that would cause any check to growth. The pans for this purpose should not be less than 4 in. deep, and be clean washed and carefully drained. There is little necessity for warming soil at this time of the year, but in case the compost heap be located in cold quarters, and the soil be many degrees colder than that of the cutting frame, the usual remedy should be applied to reduce the disparity between them. Of the soil itself little need be said. It can hardly be too rich, and it should be thoroughly prepared beforehand, such preparation depending, of course, on the nature and quality of the material about to be used. Keep the plants from 2 in. to 3 in. apart in the pans, and make the soil firm about their roots, so that while the soil encourages vigorous growth the latter may be moderated by the mechanical pressure brought to bear upon the roots, thus inducing them to become fibrous and compact rather than straggling. Return the plants to the cutting frame in which the heat has now subsided, and keep the frame close for a few days and the plants watered overhead. Admit air as they lay hold of the soil, and eventually throw the sashes off altogether, except during boisterous weather. By this careful mode of treatment a fine healthy growth will be established, and the next thing is to ripen it in such a way that the stock will not be decimated through the winter by insect pests and damp. Prevention is better than cure; therefore follow up the principle suggested at the commencement of these remarks, and ripen the wood gradually but thoroughly till it has a hazel-brown appearance. Winter the plants on a shelf near the glass in a cool, airy structure, where fresh growth will not be excited before cuttings are required the following spring; then introduce the plants in gradual batches to a sharp, moist heat, and strong, healthy cuttings may be obtained by the thousand.

Many other popular flower garden plants that require to be propagated in the autumn for stock are so like the Verbena as regards their requirements that further allusion to them, except in a collective sense, would be unnecessary. Amongst their number are Koniga variegata, different varieties of Tropæolum, Heliotropes, Iresines, &c., while Lobelias and

Mesembryanthemum cordifolium variegatum are best kept as surplus stock either in pans, pots, or boxes. W. Hinds.

Otterspool.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Cypripediums.—The different varieties of Cypripedium barbatum are most useful plants both for general decorative purposes and for the production of cut flowers. The leaves of all this section are more or less handsomely marked, and the flowers are of a most enduring character, lasting in good condition for eight or ten weeks. Those who use them largely for exhibition purposes generally put from one to three crowns together in small pots, and before or about the time of their flowering turn them out of these and put them together in considerable masses in pots of the requisite size; thus treated, they make a more imposing appearance than they otherwise would do. For general decoration they are best grown in 8-in. or 9-in. pots, six or eight crowns being placed in each pot, as if allowed to grow on until they have increased to a large mass, the inner portions of the plants get so crowded that they become weak, neither attaining their full strength, nor increasing as they will when further divided. In most cases before this the flowering will be over and growth will have commenced, and where that has occurred, unless the plants are suffering very much from want of room, it will be better to let them finish growing before interfering with them, but with such as have bloomed late and are only now slightly advanced in growth, good sized specimens may with advantage be divided into three or four, shifting them into pots sufficiently large to admit of the increase which they are likely to make for a couple of years; good fibrous peat and Sphagnum in the proportion of three parts of the former to about two of the latter, with a liberal sprinkling of fine broken crocks added and a little sand will suit them perfectly. They succeed well at the coolest end of the East Indian house, or where they can be kept slightly warmer than the majority of growers keep intermediate house plants. They require a good supply of water at the roots whilst growing, but not too much atmospheric moisture; give them plenty of light, in order to avoid the leaves getting drawn up weakly. Of the Long-tailed Cypripedium (C. caudatum) there are several forms, all of which well deserve attention. By many they are grown, like the East Indian plants, in strong heat, but I have found them to succeed best in a lower temperature than most of the Saccolabiums, Aerides, &c., require; they will now be making active growth and should be well supplied with moisture at the roots. The handsome C. villosum, C. Stonei, C. Lowi, and C. lævigatum, all very distinct and equally worthy of cultivation, will succeed well under similar treatment. They will now be in the height of their growth, and should be kept, independently of fluctuations of weather, at an even temperature, lower, of course at night than in the daytime. The old but useful C. insigne, with its handsomer form C. Maulei, the beautiful C. venustum, and C. Schlimi will also now be growing freely. Being mostly plants from a considerable altitude, they naturally grow under the influence of copious moisture, and any check through a deficiency of this will injure their growth.

Anæctochili.—These most exquisitely beautiful of all variegated-leaved plants are, by the majority of growers, found very difficult to keep in a healthy thriving condition for any considerable length of time. The experience of most cultivators is that they grow and increase satisfactorily for possibly some years, after which, without being subjected to any difference of treatment, they at once become a prey to that most fatal of all Orchid diseases, spot, which, in their case, usually affects their soft, succulent stems to a much greater extent than the leaves. This leads to the conclusion that there is something wrong in the way in which they are generally managed, and points to the apparently healthy growth which they make for a time being the result of either over-stimulating treatment by too much heat during the summer season whilst active growth is going on with an insufficiency of light and air, or that the plants are kept too continuously in a state of growth by not giving them sufficient rest in winter. The want of success in the case of the majority of growers may be traced to a combination of the above conditions. The golden-veined kinds, comprising the different varieties of A. setaceus, A. xanthophyllus, with A. striatus, and the large-leaved A. Lowi, are all natives of hot Eastern countries; consequently, they need considerable warmth; the way in which they are kept confined with comparatively little air under bell-glasses is quite opposed to the conditions essential to continued health. They should have more light and air, even though their progress under such treatment may be slower, and the leaves they form somewhat smaller and less brilliant in colour than when managed otherwise. The same holds good in the case of the silver-veined species, such as A. argenteus and its several varieties; these do not, even when growing, need nearly so much warmth as the golden-leaved kinds; they are more tenacious of life, but generally, like the golden ones, after a time they succumb. Nor can this be wondered at, seeing they are kept continually under the excitement of more heat and moisture than they need. From the effective contrast which they produce when associated with the golden-leaved varieties, they are almost invariably kept in the East Indian house with them; but, in addition to giving the silver ones more air than they usually receive, they will do much better in the Cattleya house, and if they can be set near the end or side lights, where they will get more light when the sun is not absolutely on them than when placed, as they generally are, for the convenience of inspection, nearer the centre of the house, they will be found to continue longer in a healthy condition than they otherwise would. They will succeed in a mixture of chopped dead Sphagnum, but not too far decomposed, to which a liberal amount of sand has been added, and some charcoal broken into pieces about the size of Horse Beans. So far as potting goes, there is nothing better than the usual method of growing them two or three crowns each in small pots from 2 in. to 3 in. in diameter, and these should be plunged several together as closely as they will stand in larger pots or pans also filled with Sphagnum. Keep them moderately moist at the roots whilst growing. Shade neither too heavily nor too slightly when the sun is on them, but subject them to all the light which they can get at other times, and tilt the glasses so as at all times to allow as much air as possible. Very great care should be taken with the roots of these plants, as if, by the slightest injury from whatever cause, the tender extending points are damaged, the same root will never either grow any further or break out afresh in the way in which other Orchids will do. If roots thus injured do not at once decay altogether they will do so gradually, very often affecting the stem of the plant from which they proceed.

Vanilla aromatica and V. planifolia.—These plants, the former the Vanilla of commerce, although not held in much favour by Orchid growers generally, are, nevertheless, very interesting plants. They are very suitable for running up a wall, say at the gable end of a general plant stove, where such exists, a position in which their numerous clinging roots will fix themselves like Ivy. Here they will also be more likely to receive the treatment which they require than amongst East Indian Orchids, for although, as is evident from the country where they are indigenous, they enjoy a high temperature, still, like most West Indian Orchids, they do better with a drier atmosphere and less shade than are usually given to Orchid houses. Now, whilst they are making their growth, syringe them freely every day so as to moisten the medium to which their roots cling, as, unless special provision is made by placing some material for them to run in, they are dependent for moisture upon the supply which they receive in this way.—T. Baines.

Conservatories.—Although most kinds of indoor plants will now have completed their growth, they should nevertheless still receive abundance of water, be kept far apart to prevent crowding, and have plenty of ventilation. Such as are in flower on front stages will still be benefited by a little shading. Amongst plants at present in bloom are—Passion-flowers, Hydrangeas, Fuchsias, Pelargoniums, Begonias, Campanulas, Carnations, Heaths, Clerodendrons of the Kæmpferi section, Lilies, Petunias, Mitraria coccinea, Tritonia aurea, Heliotropes, shrubby Calceolarias, Lobelias, Leschenaultias, Agapanthus umbellatus, Hippeastrums, Vallota purpurea, Witsenia corymbosa, late-blooming Clematises, Vinca oculata (red and white), Lantanas, Bouvardia angustifolia and Vreelandi, Lasiandra macrantha, Franciscea eximia, Achimenes, Gloxinias, Lapagerias, Roella ciliata, Allamandas, Asclepias curassavica, and others. Introduce from frames, pits, and greenhouses successions of flowering and fine-leaved plants, and those turned out to accommodate them, if annuals or biennials, and seed sowing is not an object, should be discarded at once; perennials should be retained, and have their flower-spikes cut off, and the plants placed on north borders, or, if necessary, potted and placed in frames. Green fly, thrips, mealy bug, and scale must be vigilantly searched for and destroyed.

Greenhouses.—Even the freest-blooming hard-wooded plants, such as Cytisus, Acacias, Clianthus, and Epacrises, are much benefited by some exposure to the open air after their growth is completed. It frequently happens that improper directions are given for the summer treatment of these plants, such as, for example, exposing them to the open air early in the summer, the effect of which is to restrict growth, and, in many cases, to cause the plants to set their flowers at once, and consequently come into bloom before the time they are wanted. This should never occur, for the great charm in a garden is to have some plants coming into flower all through the season, and to keep back as much as possible those grown under glass for the winter. Neither is there a necessity for thus exposing any plant in the open air for the length of time often supposed to be needed. With most hard-wooded subjects usually grown in pots a month out-of-doors is sufficient, and it is much better to defer this until there is just enough time for the completion of the ripening process before it is necessary to take them in through danger of frost. For this there is now ample time if the plants be at once put out. They should for the first few days be placed on the north side of a wall, or at a short distance from a tree that will shade them from the midday sun till they get a little used to the change. After they have been thus gradually inured to the sun, they may be placed where they will be fully under its influence, yet still so far sheltered as not to receive the full force of the wind. The outsides of the pots, especially the side next the sun, should be protected, or the roots which lie thickly against the inner surface will suffer. For this purpose any flexible material, such as a piece of canvas or bast mat tied round will answer. The drying influences to which plants are subjected when in the open air are much greater than in a pit or greenhouse, requiring closer attention as to watering, especially if the pots be very full of roots. They should be looked over twice a day when the weather is hot.

Heaths.—Conspicuous amongst such kinds as are in bloom are Marnockiana, Austiniana, tricolor and its varieties, Douglasi, ampullacea, Williamsi, rubens, retorta, Savileana, vestita rosea, Aitoniana and its varieties, and several others. Pick off decayed blooms and encourage the ripening of the wood by fully exposing the plants out-of-doors, or by keeping them in pits or frames that are well ventilated night and day.

No more pinching should be done now, unless it be to remove any useless growths in the centre of large specimens, which growths are generally very weakly and subject to disease. Do not water the plants overhead, but supply them liberally at the root and pour plenty of water about the floor of the house or on the beds.

Azaleas.—The earliest Azaleas should now have completed their growth and formed well-developed flower-buds; therefore, remove them to cooler quarters that are light and well ventilated. Water them plentifully at the roots but not overhead, and maintain a moist atmosphere by spilling plenty of water about the floor and on the stages. Indeed, towards the end of this month all the plants, both early and late, should be transferred to cooler houses, but on no account put them out-of-doors. Pick off weathered leaves and destroy thrips, scale, and any other depredators that may make their appearance. No more pinching of the shoots should be done now; on the contrary, the maturation of the wood should be the main object kept in view. It is a curious fact, however, that young Azaleas may be treated, for the first twelve or eighteen months after being grafted and re-potted, as cool stove plants, with beneficial effects in the way of securing a strong and rapid growth, and, if properly attended to in the matter of pinching, they will form excellent and stubby plants.

Herbaceous Calceolaria seed should be sown without delay, as upon a vigorous development of the plants before autumn depends, to a great extent, their health through the winter and a satisfactory flowering in the spring. An ordinary seed-pan is the most suitable in which to sow them. Put 1 in. of fine crocks in the bottom, and on this some dry, flaky manure to keep the soil out of the crocks; use finely-sifted soil, with one-fifth leaf-mould, also sifted; add to it one-sixth sand, fill to within 1 in. of the rim, pressing the surface smooth, and watering it to close up the holes before sowing. This should always be done as a preparation for very small seeds, or they are liable subsequently to get washed down too deeply to germinate; after this, allow the pan to stand for an hour or two before putting in the seed, which should be scattered evenly over the surface, and then covered with about an eighth of an inch of very fine soil (not more than will just hide the seed); press the surface smooth with the bottom of an empty flower-pot, place the pan in a pit, greenhouse, or garden frame, in a position where the sun will not shine upon it so as to dry the soil. If a bell-glass, hand-light, or cloche be at hand to place over the pan till the seeds are up, letting it stand on a moist surface of sand or ashes, the soil will be kept in a fit state for the seed.

Flower Garden.

The heavy rains which we have lately had have a tendency to produce a crust on the surface of the soil almost impervious to water. This, therefore, should be broken up as soon as a favourable opportunity occurs. Where the surface has been mulched with Cocoa-nut fibre, or 1 in. of dry rotten manure that has been passed through a ½-in. riddle, the advantage will be seen in the better growth which the plants will have made, the less water required, and the less baked condition of the soil. Lobelia seeds should be picked as fast as they appear, or the plants will not hold out flowering until autumn. Any Pelargoniums that produce seed-pods freely, such as the old pink variety Christine, must have them regularly taken off, or the blooming will be much reduced. Such plants as Humea elegans, Cannas, Castor-oil plants, Wigandias, and other large-leaved subjects must have abundance of water given them when the weather is dry, or they will soon get unsightly, and if the soil be at all poor liquid manure will help them. Where Yuccas, Agaves, or Palms in pots are plunged in beds out-of-doors care must be taken that they do not suffer from want of water; this is especially necessary when the pots are plunged so deep as to be below the surface in such a way that the dry condition of the soil in them cannot be readily seen. Many kinds of Yuccas are now beautifully in flower, and when properly placed are very effective. Among others one called Y. angustifolia is exceedingly pretty, being a profuse flowerer, and dwarf and compact in habit. The time has now arrived when it is generally considered advisable to commence the propagation of the various species of plants used for the purpose of bedding out in the flower garden, &c.; but in this part of the country, and no doubt in many other parts, there will this season be found a difficulty in obtaining material wherewith to form cuttings, more particularly as regards the different kinds of Pelargonium, which generally play so conspicuous a part in the ornamentation of the parterre, and it may, in some instances, be necessary to delay for a time the propagation of this family of plants. But there are several other varieties of bedding plants, of each of which it is only necessary to have a few store pots to preserve during winter, in order to produce cuttings for the purpose of increase during spring, such as the Verbena, Petunia, Fuchsia, Lobelia, Coleus, Iresine, Heliotrope, Ageratum, Alternanthera, &c.; therefore, if cuttings of these can be obtained now they should be inserted without delay in pots some 6 in. or 8 in. in diameter, which should be well drained, using a soil composed of about equal parts of river or silver sand and finely-sifted leaf soil, putting in each pot 1 in. or 2 in. of somewhat rough soil upon the Moss which covers the drainage. The pots should then be filled with the prepared soil, and the cuttings inserted, watered, and placed upon cinder ashes in a frame or pit, which should be kept quite close and moist for a few days, and shaded from bright sunshine. When the cuttings are fairly rooted, they should be at once exposed to the open air night and day, when they will become well hardened and robust, and may so remain until there is danger from frost, when they should be placed in a greenhouse or pit during winter, and if introduced into genial warmth in spring, say early during the month of March, they will then produce abundance of cuttings which will root freely, and are much to be preferred to autumn-struck plants for planting in the flower beds. It may, however, be necessary to observe that such plants as the Alternanthera, Iresine, and Coleus, being somewhat tender, will require to be wintered in a stove temperature. The various sorts of bedding Pelargoniums should all, if possible, be struck early in the autumn, placing four cuttings in a 4-in. pot, and these should be potted off singly in spring. This should be done with all the zonal varieties, and it is more particularly necessary to do so with the variegated zonal or tricolor sorts, which should be strong, well-established plants when turned out, as their development in the flower beds is not so rapid as that of the green-leaved zonals and the various Ivy-leaved sorts, which will generally succeed well if struck as cuttings in 4-in. or 5-in. pots and separated when planted in the flower beds. The various vapieties of this section of the Pelargonium family form excellent bedding plants, and do not as yet appear to be appreciated according to their worth or adaptability for this purpose. They, however, form exceedingly effective bedding plants, and are very suitable where the soil is light and dry, and will be found to succeed well during seasons and in situations in which the Petunia and Verbena, &c., would entirely fail. Among the best bedding varieties in this section of plants are the old crimson Ivy-leaved, the pink-flowering variegated Duke of Edinburgh, Bridal Wreath, the last-named forming one of the most beautiful and effective white beds which can be imagined, together with some other varieties which are hybrids between P. lateripes and zonal species, such as Willsi, Willsi roseum, Lady Edith, and Dolly Varden; the last is a variety with beautiful zoned bronzy foliage, and pretty pink-magenta-coloured flowers. Cuttings should also be struck, as soon as they can be obtained, of the more free-growing sorts, such as peltatum elegans and L'Elegante, which are useful for training upon the handles of rustic baskets or drooping from the sides of vases, &c. Continue to regulate the development of climbing plants of all sorts, such as Honeysuckles, Clematises, Tropæolums, and similar plants, which are so useful and ornamental when trained in the form of standards and pyramids, &c.

Evergreen hedges that are kept annually trimmed should now be clipped; it will have been necessary to defer this work longer this season than usual, on account of the growth being later than ordinary. Evergreen hedges should never be cut until the summer's growth is completed, which is easily seen by the shoots ceasing to extend further, and the leaves at the extremities attaining their full size and solidity. When cut too early a second growth is made, necessitating a second cutting in the autumn or winter, which tends to increase the weakening influence inseparable from all restriction of growth in the way practised with hedges confined within the usual limits. The management of hedges is often worse than anything connected with a garden. When, as is usual, it is necessary to keep a hedge cut within certain limits as regards height and breadth, the work should be carried out so as to leave it as even as a wall at the top. Nothing is more common in carrying out this kind of work with a hedge in which there are weak places, or where some portions have not attained the full size required, than to see the operator cutting almost as much away from the weak places as he does from the strongest, overlooking the fact that cutting at all makes weak plants of any kind still weaker. There is also a great want of consideration as to the nature of the plants of which a hedge is composed. As a rule, it may be taken that the larger a plant grows if left to itself the less able will it be to bear being kept continually cut in close, yet all plants are not quite alike affected in this way. A Holly hedge will remain for a generation in a healthy state if kept trimmed in to 5 ft. or 6 ft. in height, and something less in diameter, provided it is widest at the bottom and tapers up to the top so as to give the lower portion the advantage of light and air. The continued health of a hedge is more dependent upon the breadth to which it is allowed to grow than the height. A Yew hedge, for instance, will remain in health a long time when kept low if it be allowed sufficient width, whereas if permitted to grow to a height of 10 ft. and kept cut in very thin, the plants get so weak as to barely exist. Hedges consisting of any plant that is deciduous should never be cut in the summer unless they are very strong, as the removal of the shoots before the leaves have fallen off weakens them very much. The boundary hedges, especially in small gardens, are very often spoilt by allowing deciduous trees to grow in them, the roots of which impoverish the soil, and the branches overhang to an extent that renders a healthy condition of the hedge impossible. In most gardens of limited extent a certain amount of privacy is desirable. There is nothing that will afford this and have such a pleasing effect as a close line of Holly allowed to grow upwards, the lower branches being permitted to extend with little cutting. Winter and summer it always looks well, and also affords excellent shelter.

Kitchen Garden.

A little winter Onion seed should be sown; it is better to put some in now, and again in a fortnight's time, than to trust to one sowing; as, in severe winters, the plants from one will frequently succeed when the others fail. Very much depends on the kind of weather prevailing during the autumn, for the young plants of the first sowing will sometimes get a little too large, and in other seasons the second will be too late. Prepare the ground well by deep digging and moderate manuring; sow in rows 1 ft. apart. In very bleak, cold situations the White Lisbon, being very hardy, is suitable for sowing; in milder localities, Giant Rocca and Globe Tripoli are good kinds, both very large. Cut out the flower-stems of Globe Artichokes as soon as the heads are gathered; neglect in this matter at this season is often the cause of the plants dying off through the winter. The young growth makes little progress until the old stumps are removed, not having time to get strong enough before autumn. Finish planting late Broccoli and all kinds of winter Greens. Walcheren and

Veitch's Autumn Giant Cauliflowers should also be planted for late autumn use on well-manured land in an open position. Sow a good breadth of Prickly Spinach for standing the winter. Parsley may yet be sown for late spring picking; it will not run to seed quite so soon as that sown earlier. Make a good sowing of Endive, of both the green curled and Batavian varieties for winter. The earliest sown crop will now be full grown, and portions of it should be tied up and blanched in succession. The blanching may easily be effected at this season by covering each plant with an inverted flower-pot, with a bit of Moss twisted into the hole to keep out wet, air, and light. Plants from the successional sowings, now that rain has come, should be planted out on well-prepared land, 1 ft. apart, at intervals of two or three weeks. Chervil is always in request, therefore make a sowing for winter; and when the plants are large enough to prick out fill a box or two with the thinnings to place in a frame for use in bad weather. Provision should also be made to have a supply of Sweet Marjoram in a green state through the winter. This is best done by filling a box or two with the young plants in May and keeping them pinched back, but plants may be lifted now from the border, shortened back, and planted in boxes. It bears forcing well for the production of young green shoots in winter, and as it strikes freely from cuttings in heat if desired, a stock of young plants may be worked up in spring for planting out. Early Horn Carrots may yet be sown to supply small young roots in autumn and winter. The blanching of early Celery usually requires about four or five weeks, and as there is not much chance of watering it effectually after earthing up has commenced, it is better to delay this process till the Celery is nearly fully grown, or till within a month or so of its being required for use; then earth it up the full height at one operation. Ridge Cucumbers will now require a good deal of attention as regards the proper regulation of their growth and pinching out the points of the longest shoots; in all cases mulching should have been resorted to during the late dry weather. The season during which Cucumbers can be successfully grown in the open air in this country is usually a short one, therefore every expedient that has a tendency to make the growth healthy, regular, and continuous should be adopted. Box edgings may still be cut, and advantage should be taken of this change in the weather to have all gravel paths firmly rolled down.

Extracts from my Diary.

August 5.—Sowing Mustard and Cress. Putting in a batch of tricolor Pelargonium cuttings. Clearing off a piece of Turnips and forking the ground; also a piece of Strawberries, and planting the same with Coleworts and Couve Tronchuda Cabbage that have been previously transplanted. Tying Raspberry canes temporarily up to prevent the wind from blowing them about.

Aug. 6.—Sowing Chirk Castle Black Stone Turnips. Putting in Crystal Palace Gem and Ivy-leaved Pelargoniums. Lifting a piece of Gloucester Kidney Potatoes for seed. Planting a small border with Leeks. Staking William I. and Laxton's Unique Peas. Looking over Peaches and Nectarines, and removing ties, nails, &c., where not required. Thinning Turnips and Spinach. Cutting Laurels overhanging walks. Turning manure for Mushrooms.

Aug. 7.—Planting a border with Endive and Lettuces; also Savoys for small green heads, and planting out the last batch of Melons. Putting cuttings of Viola Blue Perfection and Golden Gem under hand-lights. Layering Strawberry runners on square pieces of turf, in order to obtain plants for a new plantation. Thinning, weeding, and hoeing Turnips. Pruning Apple and Pear trees.

Aug. 8.—Sowing Early White Naples, Giant Rocca, and Giant White Tripoli Onions for spring use; also Fraser's Broad-leaved and Green-curled Endive in well-watered ground. Putting in cuttings of Coleus and Centaurea. Potting Campanula pyramidalis and also C. calycanthema. Stopping shoots of Tomatoes and exposing the fruit to the full force of the sun. Digging heavily-manured ground for Endive and Lettuces. Lifting Porter's Excelsior and Scilly Red Potatoes. Watering Peach houses and late Vinery borders.

Aug. 9.—Sowing Early London, Large Asiatic, Walcheren and Veitch's Autumn Giant Cauliflowers. Potting Queen Pines in peat, loam, and rich bones, emptying the pit and re-arranging the plants. Earthing up Celery, Cardoons, and Leeks. Hoeing amongst Gooseberries and Currants. Gathering Green Gage Plums for preserving. Watering part of the Pines; also Celery and Cabbage plants.

Aug. 10.—Sowing a few pots of Mignonette; also a border of Turnip Radish. Clearing off Peas that have ceased bearing. Picking over and weeding carpet beds. Fruit in use for dessert: Pines, Melons, Grapes, Figs, Plums, Cherries, Pears, Apples, Gooseberries, and Currants.—W. G. P., *Dorset.*

Seedling Poppies.—For some years past the yellow Alpine Poppy has seeded freely with me, and latterly the white and the deep orange less freely. Can any of your readers tell me if the latter be a distinct plant? as I have repeatedly, with great care, saved the seed of the orange, and have always found the majority of the seedlings to be of different shades of yellow, and only exceptionally the real deep orange. I almost doubt if the white comes always white. The old plants in my stiff soil seldom survive, but the self-sown plants are lovely from May till autumn. I have bees which work freely among my Poppies.—J. R. Droop, *Stamford Hill.*

GARDEN BOTANY.

(Continued from p. 84.)

Variations in the Structure and Insertion of the Anther.—We have stated that the number of cells in the anther is usually two, rarely one or three or four. One family, the Malvaceæ, is characterised by having invariably one-celled anthers; and there are instances of it in other families. The genus Moringa (fig. 387), which of itself constitutes a family, has also normally one-celled anthers. Originally two-celled anthers sometimes become one-celled by the fusion of the two cells fig. 388). Four-celled anthers are common in the Laurineæ (fig. 391); and the anthers of Ephedra (fig. 390) have been described by different writers as one, two, and four-celled. Duchartre describes them as one—four-celled. When the pollen is mature, the anthers open, or dehisce, to allow it to escape. The dehiscence is by longitudinal slits (fig. 389), by transverse fissures (figs. 394 and 395), by apical orifices (pores—fig. 393), or by recurved valves (figs. 391 and 392). The anthers of the Laurineæ and Berberis dehisce by recurved valves; of the Ericaceæ by apical pores; and of the great ma-

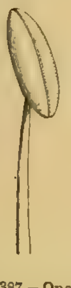


Fig. 387.—One-celled versatile anther of Moringa.

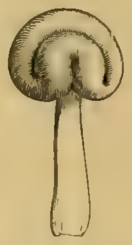


Fig. 388.—Reniform anther of Ground Ivy finally one-celled by the fusion of the two original cells.

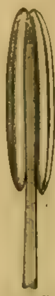


Fig. 389.—Stamen of Iris with two nearly parallel cells dehiscing by longitudinal slits.

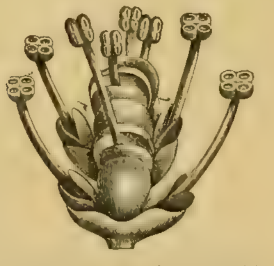


Fig. 390.—Flowers of Ephedra altissima, showing the four-celled anthers.

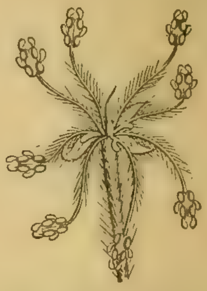


Fig. 391.—Andrœcium of a Laurineæ with four-celled (stamens opening by as many reflexed valves.

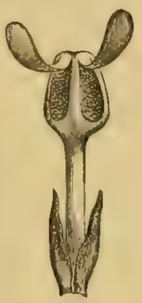


Fig. 392.—Stamen of Monimia, dehiscing by two recurved valves.

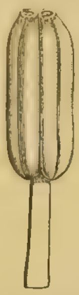


Fig. 393.—Stamen of Azalea, dehiscing by two apical pores.

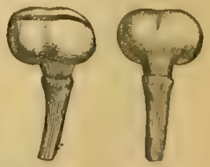


Fig. 394.—Front and back views of a stamen of Alchemilla, which dehisces transversely.

jority of plants by longitudinal slits. The side of the anther towards the pistil is called the face, and the side next to the petals the back. When the dehiscence is down the face, it is termed introrse; when down the back, extrorse; and when at the sides, lateral. Anthers are free from each other and from other organs, or they cohere and form a tube around the style, as in nearly all the Compositæ (fig. 396); or they adhere to the pistil, as in the Orchideæ. When the anthers are united as in the Compositæ, they are syngenesious; when the stamens are confluent with pistil, they are gynandrous.

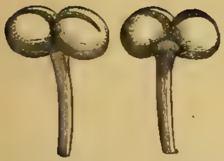


Fig. 395.—Front and back views of a stamen of Mercurialis, with globular cells.

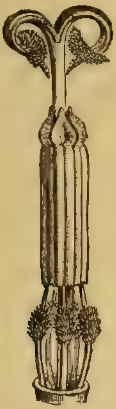


Fig. 396.—Stamens with united (syngenesious) anthers, as in almost all the Compositæ.

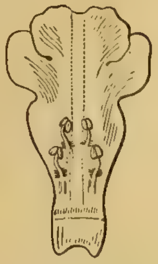


Fig. 397. — Corolla of Sideritis perfoliata cut open to show the didynamous epipetalous stamens.

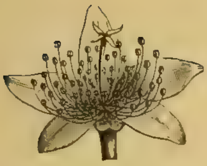


Fig. 398.—Polyandrous flower of Tetragonia expansa.

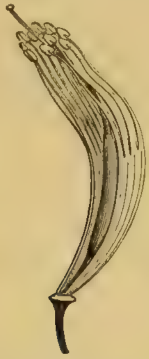


Fig. 399.—Monadelphous stamens of Æschynomene.

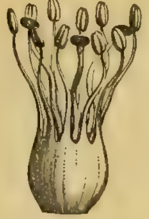


Fig. 400.—Monadelphous stamens of Erythroxylon Coca.

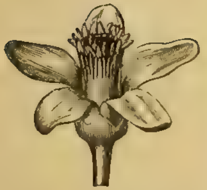


Fig. 401.—Flower of Orange, with monadelphous stamens.

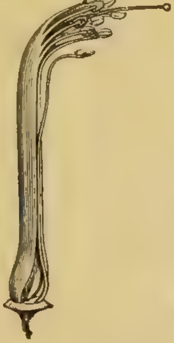


Fig. 402.—Diadelphous stamens of Kidney Bean.

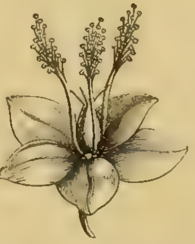


Fig. 403.—A flower of Hypericum ægyptiacum, with triadelphous stamens.

Number and Insertion of the Stamens.—In the paragraph treating of the insertion of the petals will be found definitions of the terms hypogynous, perigynous, and epigynous, which terms are also applicable to the insertion of stamens; and we have only to add that when the stamens adhere to the corolla, they are termed epipetalous (fig. 397). The stamens of most gamopetalous flowers are epipetalous; whereas, there is seldom adhesion between petals and stamens in polypetalous flowers, or it is very slight. The number of stamens in each flower varies in different plants from one to very many. When the number does not exceed ten or twelve, it is, to all intents and purposes, constant in the same species; though when above that number, the absolute number is liable to fluctuate. To indicate the number of stamens, the term androus is employed in connection with the following Greek prefixes :—

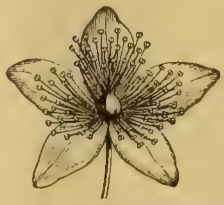


Fig. 404.—Flower of Hypericum, showing triadelphous stamens.

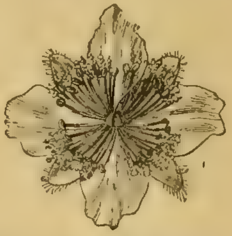


Fig. 405.—Flower of Sparmannia africana, with tetradelphous stamens.

	No. of Stamens.	Examples.
Mon-androus	1	Lemna, Centranthus.
Di- ,,	2	Veronica, Ligustrum.
Tri- ,,	3	Grasses, Iris.
Tetr- ,,	4	Cornus, Linnæa.
Pent- ,,	5	A vast number of plants.
Hex- ,,	6	Liliaceæ, Berberis.
Hept- ,,	7	Trientalis.
Oct- ,,	8	Daphne, Fuchsia.
Enne- ,,	9	Butomus umbellatus.
Dec- ,,	10	Rhododendron.
Poly- ,,	more than 10	Papaver, Rubus.

The prefix poly here signifies that the number is above ten, but when coupled with sepalous or petalous, it simply indicates that there is no cohesion, regardless of number. When the number of stamens exceeds ten, they are indefinite; when ten or fewer, definite. Indefinite stamens are extremely rare in the gamopetalous natural orders. Styrax and some of the Sapotaceæ are nearly the only examples of gamopetalous flowers having very numerous stamens, but the cohesion of the petals is very slight.

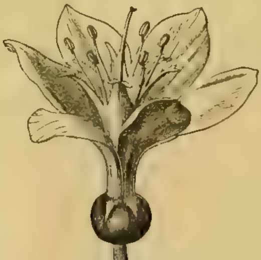


Fig. 406.—Flower of Eurycles.

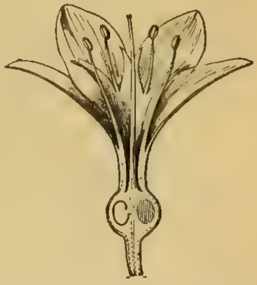


Fig. 407.—Longitudinal section of a flower of Eurycles, showing the monadelphous stamens, the tube of which adheres to the perianth.

Variations of the Filament.—These are innumerable, and therefore it will be sufficient to point out two or three of the more striking forms. In the Rhododendron and some Fuchsias they are very long and slender (filiform); in the Barberry they are thick and fleshy; and in the Sweet Bay they are furnished with two glandular appendages near the base. The union of the filaments in one or more groups or clusters is a character not to be overlooked. When they all cohere together they are monadelphous; they form a closed tube, as in the Orange (fig. 401) and Erythroxylon (fig. 400), or the continuity of the union is broken down the posterior side, as in many Leguminosæ (fig. 399). In a very large number of the family just mentioned the stamens are diadelphous; nine of them cohere by their filaments, whilst the tenth and posterior one is free (fig. 402). Some species of Hypericum have triadelphous stamens (figs. 403 and 404), whilst others (for example, H. Androsæmum) have them pentadelphous, or in five clusters; and in Sparmannia africana (fig. 405) they are tetradelphous. When the number of clusters of stamens exceeds five, they are denominated polyadelphous. In Eurycles (fig. 407) the stamens are monadelphous and adhere to the perianth, and the tube is lobed between the anthers.

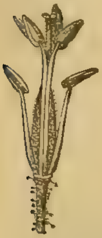


Fig. 408.—Tetradynamous stamens of Sterigma sulphureum.

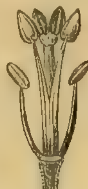


Fig. 409.—Tetradynamous stamens of Anchonium Billardieri.

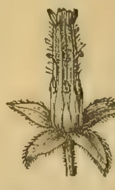


Fig. 410.—Flower of Oxalis Deppei, with ten stamens, five of which are shorter than the others.

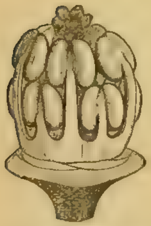


Fig. 411—Andrœcium of Hugonia; 10 stamens alternately long and short.

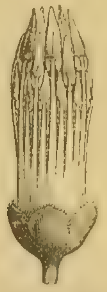


Fig. 412—Andrœcium of Humiria; 20 stamens of four different heights.

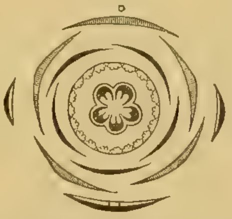


Fig. 413.—Diagram of the flower of Humiria; 20 stamens in one whorl.

Relative Height of the Stamens.—Stamens are of equal height or length, or they vary in this respect. In the bilabiate corolla there are usually two pairs of stamens, one pair longer than the other (fig. 397), and they are termed didynamous. There are six stamens associated with the cruciform corolla, two of which are shorter than the others (figs. 408 and 409), or what is called tetradynamous. Frequently the stamens are double the number of petals or lobes of the corolla—for example, Oxalis (fig. 410) and Hugonia (fig. 411). Humiria (fig. 412) has twenty stamens alternately of four different heights.

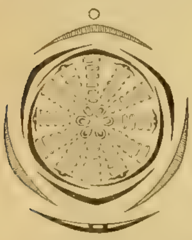


Fig. 414.—Diagram of the flower of the Winter Aconite (Eranthis); petals in two series; stamens numerous in many whorls.

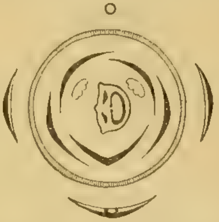


Fig. 415.—Diagram of the flower of Valerianella Cornucopiæ; stamens two.

Position and Number of the Stamens with Reference to the Other Parts of the Flower.—The number of sepals, petals, stamens, and carpels of a flower may be the same, when the flower is isomerous, but it frequently happens, as we have already shown, that they are unequal in number, or anisomerous. The calyx and corolla generally have the same number of parts, and it is the stamens and carpels that usually differ in number from the floral envelopes. Humiria (fig. 413) has five sepals, five petals, and twenty stamens all in one whorl. The Winter Aconite (fig. 414) has very numerous stamens in several whorls. Sometimes the number of stamens in otherwise closely allied plants is different. The Valerianeæ offer an illustration of this. A theoretical diagram would show five stamens, but on account of the suppression of some of them, a real diagram gives a smaller number: thus, Centranthus ruber only one, Valerianella (fig. 415) only two, and Valeriana (fig. 416) three. Monsonia (fig. 417) has five petals and fifteen stamens in two whorls; ten in the outer and five in the inner. The Flowering Rush (fig. 418) is the only British plant having nine stamens, and these are in a single whorl and associated with a six-leaved perianth. Anchusa (fig. 419) and Hermannia (fig. 420) have both five petals and five stamens; in the former the stamens alternate with the petals, whilst in the latter they are superposed to the petals. The flower of Hermannia is isomerous and Anchusa anisomerous, as there are only four carpels in the gynœcium. W. B. Hemsley.

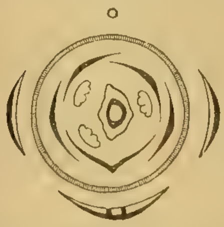


Fig. 416.—Diagram of Valeriana; three stamens and five petals.

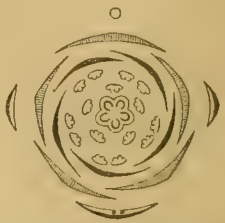


Fig. 417.—Diagram of the flower of Monsonia (Geraniaceæ); fifteen stamens in two whorls, the outer whorl containing ten.

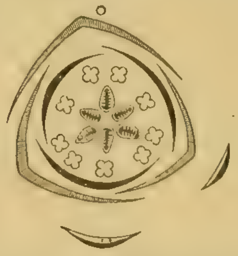


Fig. 418.—Diagram of the flower of the flowering Rush (Butomus); stamens nine.

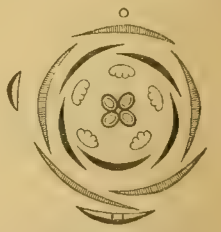


Fig. 419.—Diagram of the flower of Anchusa italica; stamens five, alternate with the petals.

Market Gardeners' Waggons.—It is surprising that the attention of the medical journals has never been called to the manner in which vegetables are conveyed to market. We have frequently to pass through Covent Garden, and a sight of the waggons in which the produce is brought there is enough to produce nausea. They are, without exception, all used on the return journey for the conveyance of manure and all kinds of filth to the garden ground. This idea would not be pleasant even if the vehicles underwent a thorough cleansing after each journey; but this is never done, and it is quite a common thing to see a load of Lettuces or spring Onions—esculents not cleansed by boiling before being eaten, like Turnips or Cabbages—put in a waggon of the most filthy description. The danger to health of these doings speaks for itself, and we trust that the "Lancet" or The Garden may take the matter up, and in the meantime we will make a note of a few of the names of the chief offenders. —"Weekly Times." [Attention has already been directed in The Garden to this matter (see Vol. IV., p. 142); but the evil still exists, and will continue to do so, we suppose, until market gardeners see it to be to their interest to stop it.]

THE FRUIT GARDEN.

BEST BEARING APPLES AND PEARS.

In looking over the report of the fruit crops given in The Garden (see p. 39) one is struck by the frequency with which the names of certain kinds of Apples and Pears occur as carrying good crops of fruit in all kinds of soils or situations, and we have attempted to summarise the list roughly, just to see what sorts are the most eligible for general planting. It will be remembered that last summer and autumn was very unfavourable to the ripening of the wood, and poor crops were predicted in consequence, and in many cases also the weather was severe when the trees were in flower. The names of those kinds, therefore, that have passed through these vicissitudes are worth noting by those who contemplate the culture of the Apple and the Pear. Both Apples and Pears, it may be stated, blossomed freely; but, owing to the immature growth last year, and the frosts in spring, much of the fruit failed to set, or it dropped afterwards. Taking the report as it is arranged, let us begin with the metropolitan and south-eastern division. The names of the Apples which are mentioned in this division are, first, Lord Suffield and the Codlins, which appear to have missed nowhere. The next best are Hawthornden, Blenheim Pippin, King of the Pippins, Wellington, Cox's Orange Pippin, Yorkshire Greening, Ecklinville Seedling, Northern Greening, and Alfriston. Pears are the Hazel, Comte de Lamy, Hacon's Incomparable, Marie Louise, Beurré d'Amanlis, Seckle, Duchesse d'Angoulême, Beurré Hardy, Ne Plus Meuris, Althorp Crassane, Louise Bonne, Beurré Diel, Jargonelle, Glou Morceau, and Josephine de Malines. These sorts are spoken of by several correspondents as bearing the best crops. In the south-midland division the best bearers are again Lord Suffield, all the Codlins, Stirling Castle, Blenheim Pippin, Wellington, Blenheim Orange, Royal Pearmain, Hawthornden, Sturmer Pippin, Bess Pool, Red Quarrenden, Royal Russet, Scarlet Pearmain, Ribston Pippin, and Waltham Abbey Seedling. Pears: Marie Louise, Glou Morceau, Duchesse d'Angoulême, Jargonelle, Ne Plus Meuris, Beurré Rance, Beurré d'Aremberg, Beurré Superfin, Louise Bonne, Seckle, Hazel, Easter Beurré, Williams' Bon Chrétien. Next comes the west-midland division, including Great Malvern, Bristol, Stourport, Tamworth, and Ledbury, &c. In nearly all the reports we again find Lord Suffield, Manks and Keswick Codlins, Hawthornden, Ecklinville, Blenheim Orange, and Stirling Castle Apples to the front, followed by Yorkshire Greening, Warner's King, Cox's Pomona, Lord Grosvenor (the latter spoken of as being exceptionally fine), Sturmer Pippin, Winter Pearmain, Tower of Glamis, Tom Putt, Cellini, Red Astrachan, and Ribston. In some districts Cellini is spoken of as an Apple which never misses a crop. Pears consist of Knight's Monarch, Glou Morceau, Duchesse d'Angoulême, Beurré Superfin, Marie Louise, Beurré Diel, B. Rance, Louise Bonne, Gansel's Bergamot, Althorp Crassane, Beurré d'Amanlis, B. Clairgeau, Seckle, and Williams' Bon Chrétien.

The north-midland division includes part of Notts, Derby, and Lincoln. The names of the good bearing Apples and Pears given are, with few additions and exceptions, exactly the same as those already recorded in the other divisions—Hawthornden, Lord Suffield, Cellini, Sturmer Pippin, Irish Peach, King of the Pippins, Margil, Scarlet Nonpareil, Cox's Pomona, and Rosemary Russet being mentioned as "fail-me-nevers" in bad seasons. From Sherborne Castle, in the south-western division, the report says that Pears are a failure, with the exception of Easter Beurré, Passe Colmar, Glou Morceau, Ne Plus Meuris, Beurré de Capiaumont, Jargonelle, and Marie Louise, on walls. At Carclew, in Cornwall (same division), on an unsuitable and shallow soil, the following Apples are said to do best: King of the Pippins, Oslin, Braddick's Nonpareil, York Pippin, Blenheim Orange, Golden Harvey, Boston Russet, Adams' Pearmain, Keswick Codlin, and Hawthornden. Beurré Clairgeau, Marie Louise, Gansel's Bergamot, Beurré Diel, and Duchesse d'Angoulême in the same district are mentioned as the best Pears. The north-western division includes the Manchester district, Crewe, Chester, Grantham, Liverpool, and Wigan. From these districts the lists are again nearly the same as those already given. Lancashire reports speak particularly of the Irish Peach, Lord Suffield, Keswick Codlin, and Cellini Apples as being the most reliable kinds. Mr. Ingram, of Belvoir, Leicestershire, refers specially to the Northern Greening as a constant bearer, the King of the Pippins as being very prolific, and the Yorkshire Greening and Frogmore Prolific as unfailing. The best Pears generally are Marie Louise, Louise Bonne, Beurré Diel, Passe Colmar, Glou Morceau, Winter Nelis, Williams' Bon Chrétien, and Beurré d'Aremberg. Turning to the eastern district, including Bury St. Edmunds, Norwich, Ipswich, and Saffron Walden, we find that severe frosts about the beginning of April did much mischief in some places, proving fatal in a great measure to the Apple and Pear crops. Among Apples which had to some extent escaped, and which are bearing crops, the following are mentioned: Keswick Codlin, Kerry Pippin, Warner's King, New Hawthornden, and Cellini. Apples on cordons and protected while in flower: Lord Suffield, Nelson's Glory, Tower of Glamis, Red Astrachan, Ribston Pippin, and Cox's Orange Pippin. Pears: Williams' Bon Chrétien, Comte de Lamy, Beurré Bosc, Josephine de Malines, Jersey Gratiole, Beurré Clairgeau, Marie Louise, Glou Morceau, and Louise Bonne. Coming to Yorkshire, embracing an extensive tract of country from the neighbourhood of Nottingham to the borders of Durham, we find the following Apples and Pears only mentioned as good: Keswick and Manks Codlins, Lord Suffield, Lord Nelson, Hawthornden, Ribston Pippin, Cox's Orange Pippin, Warner's King, and Cockpit. Pears in some places are good, especially Marie Louise, Beurré Diel, Winter Nelis, Glou Morceau, and Beurré d'Aremberg.

From Durham, or northern division, we have reports of light crops of both Apples and Pears, which is attributed chiefly to late frosts and unfavourable weather when the trees were in flower. The kinds spoken of as bearing crops are—Apples: Ribston Pippin, Mannington's Pearmain, Scarlet Nonpareil, Boston Russet, Magnum Bonum, Keswick Codlin, Rymer, Lord Suffield, Blenheim Orange, Cockle Pippin, Claygate Pearmain, King of the Pippins, and Hawthornden. Pears: Easter Beurre, Jargonelle, Hazel, Green Yair, Louise Bonne, Althorp Crassane, Beurre de Capiaumont, Vicar of Winkfield, Beurré Superfin, and Comte de Lamy. What cannot fail to strike any one who reads over the list just given is the occurrence of the same names of Apples and Pears, with few variations, in nearly all the districts between Cornwall and the northern borders of England. The situations, as regards soil and climate and other conditions, in which they are found, must differ greatly; but, contrary to our expectations, we find that the varieties of the Apple and Pear which have done best in all the districts are nearly the same. Another thing: they are mostly all good old sorts, and many of the varieties, of the Apples especially, are among the hardiest kinds. Many varieties of the Pear did not bloom at all—doubtless owing to the unfavourable season—last year; and, if a list of these had been furnished, they would doubtless have been found to be the same generally all over the country. What the reports show more clearly, perhaps, than anything else is that the Apple and Pear thrive pretty well in all parts of England, and on soils of the most varied descriptions; and that what we have to fear chiefly is the weather—the occurrence of cold and wet seasons on the one hand, when the growth fails to get properly matured, and spring frosts about the time when the trees are in flower on the other.—"Field."

FRUIT GROWING IN ITALY.

That good fruit can be grown in Italy has been fully proved by the beautiful display of Apples and Pears made by Signor Francesco Cirio, of Turin, at a meeting of the French Société Centrale d'Horticulture held at the beginning of last May. With a few exceptions, the fruit exhibited were distinguished by local names; the different varieties were therefore somewhat difficult to distinguish. Some of them, however, have kept their real names, such as the Calville and Canada Reinette Apple, and the St. Germain and Martin Sec Pear. The whole of the fruit exhibited was grown on untrained trees in the open ground, trained fruit trees of any form being very rare in Italy. The specimens were remarkably well preserved, considering the advanced period of the year at which they were shown. According to the account given by Signor Cirio to the Committee of Arboriculture, it consists in placing the fruit in dark, well-ventilated cellars, or indeed in any very dry place from which the light has been shut out. They may be piled in layers not exceeding 10 in. in depth. The fruit intended to be preserved should be gathered as late as possible, being allowed to remain on the trees till the month of November. It seems that, by gathering them so late in the season, they keep better than if plucked at an earlier period. The process is carried on by Signor Cirio on an extensive scale, and a large amount of business is done by him in this direction both by home and foreign fruit-sellers. In the Italian section of the Universal Exhibition in the Champ de Mars Signor Cirio exhibits several large cases of Apples and Pears preserved according to this method. The quality of the fruit shown by Signor Cirio was acknowledged to be excellent. Amongst them were several specimens of the St. Germain Pear, which had thoroughly preserved the whole of its characteristic merits at even so advanced a period of the season as the beginning of May. Signor Cirio also exhibited preserved Peaches of good quality of the Pavie variety, the flesh of which, however, adheres strongly to the stone, although it is exceedingly sweet and agreeable to both palate and smell. These preserves can be sold in Paris at 1s. 5d. per kilogram, about 7½d. per lb., each kilogram containing twelve Peaches. Amongst other fruits in Signor Cirio's collection, says the secretary of the Committee of Arboriculture, are two varieties of Chestnuts, one of which, when once cooked, may be kept in a perfect condition for two or three years. There is also a variety of Apple which has been kept in water for three months, the flesh of which has become converted into a kind of jam, which, although somewhat recalling the flavour of a sleepy Pear, is still quite eatable. The Committee of Arboriculture awarded Signor Cirio a first class prize with an expression of regret that, in consequence of a rule of the Society, they could not recommend the exhibitor for a reward of a higher order. In the cases shown by Signor Cirio at the International Exhibition there are specimens of other fruits both in the natural and preserved condition. Amongst them are some Tomatoes grown last year, but which are still perfectly fresh, although the only treatment they have received has been to suspend them in a dark, dry room. Signor Cirio's principal customer seems to be Germany, who took 552 railway vansful last year, Austria following with 405, and France with only 7. C. W. Quin.

HELPS DURING THE FRUIT HARVEST.

The old practice of clubbing the trees, to make them give up—or rather down—their fruit, is well nigh a thing of the past. When it is shown that the careful handling of fruit actually pays in dollars, people learn, though slowly, to adopt better methods. Picking by hand has generally taken the place of shaking and beating the trees. In picking, ladders are needed, and for all trees of moderate size some form of the step-ladder is preferable to any other. The accompanying (fig. 1) is a sketch of a home-made ladder, which is found to be useful in the orchard. A ladder similar to this, in having but one upright, has long been in use in Europe, but this is much simpler, and may be made by almost anyone. A pole of the desired length is split at its lower end, and furnished with rungs, reaching between the two parts below, and passing through the unsplit portion above. The pole may be of any green wood that will split readily, but the rungs should be of tough, well-seasoned wood, and 1½ in. through. We would suggest that an iron ring be placed upon the pole, or a bolt be put through, at the point where the split terminates. A ladder of this kind is much more easily placed in the branches of a tree than one of the common form, and, being so wide at the base, will stand more firmly, especially on uneven ground.

An orchard hook will sometimes be found convenient. This, as shown in fig. 2, is a wooden rod with an iron hook at one end. A piece of wood a few inches in length slides upon the rod, and has a strong peg near the end. By placing the hook over a branch it may be drawn near to the picker, who catches the sliding piece under a lower branch, pushing the piece along the rod as may be necessary; the pressure coming upon the peg, the sliding piece is held by the side-wise strain and cannot slip. By the use of this, the picker can often avoid moving his ladder in order to reach the fruit, and it leaves both his hands free.

Fruit pickers have been invented in great numbers, and the amount of ingenuity expended upon them is all out of proportion to their real usefulness. Some are made to cut, and others to pull off the fruit; some catch the fruit in a little bag at the upper end of the affair, and others let it run down through a long sleeve into the hand or basket, and so on in great variety. Still, where fruit is upon a slender branch—and the finest specimens are often provokingly out of reach—some help of this kind comes in play, but in picking for market they make too slow work. We have seen a very effective picker extemporised in a few minutes. An old fruit can had a long V-shaped notch cut in the side; by means of a large-headed nail put through the bottom the can was made fast to the end of a pole; a handful of Grass put into the can made the picker complete. The stem of the fruit being caught in the notch, it readily parted from the tree, and the Grass prevented all bruising. The following is an illustration of an implement called a "jack-knife picker," because a man or boy can readily make one with his pocket-knife. The engraving (fig. 3) will show how it is constructed. A light lath, or other strip, ½ in. by 1¼ in., and about 10 ft. long, is fitted with a projecting piece at the end; a lever, also curved at one end, passes through the long strip near the top, and is provided with a spring of hoop-skirt wire to keep it open. The lever is worked by a stout cord, such as a fishing-line, which is attached to one end, passes through the pole, down through another hole, and attached to one

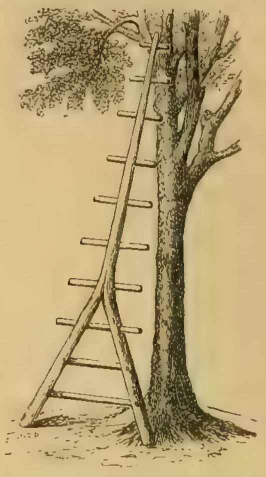


Fig. 1.—Orchard ladder.

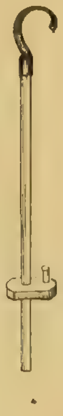


Fig. 2.—Branch-hooker.

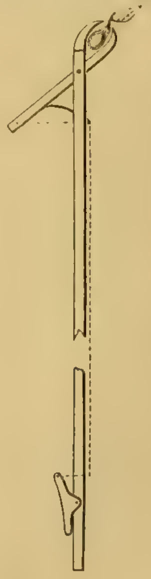


Fig. 3.—Fruit-gatherer.

end of a lever which is at the lower part of the lath. By depressing this lower lever the cord moves the upper one, and it is made to grasp a Pear or other fruit, pick it, and hold it until it is placed in a basket, which, for convenience, should be placed as far off from the operator as the length of the picker. We would suggest that much friction on the cord would be avoided by running it through a couple of screw-eyes screwed into the lath.

Baskets used in picking should be of medium size, as the larger the basket, the greater the risk of bruising its contents. Some orchardists have them small enough to be turned inside of a barrel, so that when filled they may be emptied into the barrel in such a manner as to allow the fruit to roll out gently rather than to fall from the top of the barrel. It is convenient to have the handles furnished with hooks, by which they can be hung to a branch; these should have a ring at one end large enough to allow it to slip along on the handle, and so closed that it will not drop off the hook and be lost. It is sometimes convenient to hang the basket to a strap, which passes over one shoulder.—"American Agriculturist."

FRUITLESS!

(A Groan from Susan Gingham.*)*

"The extraordinary fecundity of the United States in the matter of fruit is proverbial; but it may not be generally known that 3,000,000 Peach trees bloom every spring on the sunny plains between the Delaware and Chesapeake Bays. The details of the American fruit crop almost savour of romance. The Apple crop of the country is past counting; the surplus fruit, if properly saved, would keep all Europe in table luxuries. The birds on New Hampshire hills are feasted with Raspberries, the mountains of North Carolina and Tennessee are purple with Blackberries which go to waste; and the time has been when an extra good crop of Peaches in Delaware has meant a million baskets of fruit untouched upon the trees."—"Standard."

Mr. Punch,
This startling extrack, which I wenture to enclose,
Tom, my nephew, read out loud, in aggerawation, I suppose.
I wos picking a few Gooseberries, with a eye to jam, and he
Said he thought it aperypo—whatever that may chance to be.

Which *I* call it downright riling. Gracious goodness! here am I
Paying sech a price for fruit as is enough a saint to try,
While in Delaware by millions Peaches waste upon the trees,
And on the New Hampshire hills the birds eats as much fruit as they please.

Well, them Yanks is precious lucky. Things in England is gone queer.
Fruits with us ain't wot they wos, but mostly poor, and likewise dear.
Wot with blights and sopping summers, big jam makers, and them clubs,
Little fruit *we* gets, and wot we do is windfalls, specks, and scrubs.

Strorberries ain't got no sweetness; as for Apples, bless yer 'art,
Not one sample in a dozen 's fit for pudden or for tart;
For Cherries they're all skin and stone, and as for Ribsting Apples, lor!
They're like good Cheshire cheese, a pleasink mem'ry, and no more.

True, there's lots of rum new-fangled things as they call forren fruits,
Eatin' like raw Scarlet Runners, or as tough as Rhubarb roots,
Prickly Pears and them Bananas, tasting jest like sweetened soap,
But you won't find British housewives cottoning to sech, I hope.

England's fruits was England's pride, and 'ome-made jam our household boast;
O the rare tucks-out I've had of Gooseberry-fool and buttered toast!
Then the jars of Raspberry jam—but there, it doesn't bear a thought.
If there's any Raspberries grow'd they're all by Crosse and Blackwell bought.

Them shop jams is hutter 'umbug; but we never has no sun,
And the fruiting season's over most afore it seems begun.
Tom declares Pomoner's cut us; wot he means I do not know,
But I'm sure our fruits to-day ain't like the fruits of long ago.

Apples! Wy, the shams we gets is jest heartbreaking. I believe
If they'd grow'd like that at fust, one never would have tempted Eve;
Which I've always felt conwinced the fruit as caused that fatal slippin'
Must a' bin that British pride, a regular good old Ribsting Pippin!

Haven't seen one not for years, the fruiterers say they're dying out.
Wy the dickens did they let 'em? Wot must they have bin about?
Now we've nowt but measley windfalls, tasteless and but seldom sound,
Sold in open shops by Jews, and, like Pertaters, by the pound.

Then to read about them Yankees, with their splendid Apple crop,
Their three million blooming Peach trees, and—but there I'd better stop!
Which I'm a patriot, I 'ope, but a turn in Tennessee
Would, I fear, make half a Yankee of
Yours sadly,
Susan G.

—"Punch."

FRUIT CROPS IN WORCESTERSHIRE.

I am sorry on the whole to have to make an unfavourable report as to the fruit crops in this neighbourhood. The blossom on nearly all kinds of fruit was profuse, that of the Pear, perhaps, being the greatest exception; but it is rather a remarkable fact that, considering the scarcity of Pear bloom, Pears have set more fruit in proportion to the bloom than any other fruit. The Apple bloom was abundant, and till the cold weather and continuous rains in April and May the crop promised to be one of the greatest on record; but the fruit failed to set in any quantity, and a great portion of that which did set afterwards dropped, so that the Apple crop, for the most part, may be considered a great failure. There are, of course, some few exceptions on heavier soils and in sheltered situations. Plums set a large crop, but during the recent dry weather a great portion of the crop has fallen. There will upon the whole, however, be a larger crop of Plums than of any other fruit. The Pears which carry anything like a crop are chiefly Bon Chrétien, Louise Bonne of Jersey, Beurré d'Aremberg, Beurré Diel, Beurré d'Anjou, Easter Beurré, and Beurré d'Esperen; whilst Beurré Superfin, Doyenné du Comice, Comte de Lamy, Marie Louise, and some others have only a very small crop. Amongst Apples, Small's Admirable again bears the palm; but there are small crops of Lord Suffield, Keswick Codlin, Blenheim Orange, Cox's Orange, Ribston Pippin, Melon Apple, and Dumelow's Seedling. Perhaps the best crops out of some fifty varieties are Small's Admirable, Cox's Orange Pippin, Melon Apple, Lord Suffield, and Dumelow's Seedling. Of Plums, Rivers' Early Prolific, Victoria, Pershore, and Mitchelson's bear the largest crops. Protected trees on walls of all kinds are in tolerably full bearing, but the same cannot be said of Peaches and Nectarines, which, despite the greatest care as to covering, are but a very slender crop. The Peaches doing best are Early Rivers, Alexandra, Noblesse, Bellegarde, and Princess of Wales. The Nectarine crop is very meagre indeed, and scarcely any sorts that I could particularise are doing well. Aphis blight has prevailed to a great extent on these and most other kinds of fruits—on Plums equally so with Peaches and Nectarines. Apricots are a moderate crop, but the fruit is dropping fast, and, unless rain soon comes, most of the fruit of all kinds will fall, and what remains will be very small and ill-shaped. Gooseberries are a partial crop, and for the most part very scarce. Currants (Red and Black) are abundant and fine. Lee's Prolific Black Currant still holds its own as a great improvement as to sweetness and flavour. Raspberries here are doing well, but the crop generally is under the average. Strawberries have been plentiful, but the season the shortest I ever recollect—ripening commenced about the 16th of June, and now (July 18) the season is nearly over, the earliest to ripen being Amy Robsart, Hundredfold, Early Prolific, and Early Crimson Pine, and the latest now remaining being Mrs. Laxton, Excelsior, and Bonny Lass. The first of them (Mrs. Laxton) will be a valuable addition to the latest sorts, being very late and of delicious flavour. Filberts are scarce. Cherries have been greedily devoured by the birds, and it seems useless to grow them out-of doors—even Kentish and Morellos sharing the same fate during the hot, dry weather. The soil here and in this neighbourhood is light, on a gravelly subsoil.

W. Roden.

Fruit Crops in Caithness.—In your notices of the fruit crops throughout the country I see no mention made of those in Caithness, where I have been lately. Both Apples and Pears are very fair crops, and Gooseberries are something extraordinary, both in Caithness and in the northern parts of Sutherlandshire. At Stangergill, the residence of Mr. James Traill, within ten miles of John o' Groats, Gooseberry bushes were when I saw them (June 20) being propped up to keep them from being broken down by the enormous crop which they were carrying.—J. Downie, *Pink Hill Nursery, Corstorphine.*

Apple Mildew.—At the sitting of the French Academy of Sciences, on July 8, it was announced that the Paradise Apple crops of the present year are severely attacked by some peculiar disease, chiefly characterised externally by a whitish efflorescence upon them.

An opinion was hazarded by M. Dumas that this appearance might be attributable to Oidium, and that the disease would give way to the sulphur treatment so successful in the Oidium of the Vine. MM. Decaisne and Duchartre were deputed to make a special study of the disease, and report upon it as soon as practicable.

SUMMER PRUNING FRUIT TREES.

If we examine closely about this season any healthy Apple or Pear tree, or indeed any other kind of fruit tree that carries its fruit for the most part on spurs, we shall find no difficulty in identifying the short stout spurs within whose plump terminal buds are folded up the embryo crop of next year. In a free-bearing tree they will be found on the main branches as well as on the younger wood, and they usually vary from ½ in. to 1 in. in length. Some kinds of Pears, such as Marie Louise, bear on much longer spurs than others; but they are exceptions to the general rule. Usually the leaves on the young branches of fruit trees are placed alternately; but round the points of the fruit buds some five or six leaves are gathered into a sort of whorl or cluster, as if for the double purpose of supplying nourishment and protection. Now, I think it must be obvious that next year's crop must in a great measure depend upon these embryo fruit-buds reaching a proper state of development and maturation. In maintaining the balance of power that exists in fruit trees, the main factor in the cultivator's hands is the manipulation of the growth in summer. By stopping the young growth, or by thinning crowded shoots, he can let in floods of sunshine and currents of air, to impart strength and substance to the foliage surrounding the fruit-buds, that will not be without influence upon next year's crop. Many blossoms in a tree crowded with wood and foliage never attain the strength necessary to bring forth perfect fruit, because of imperfect development due to want of exposure to sun and air this season. This fact, then, alone should be sufficient argument in favour of the proper thinning and shortening back of the young shoots made in summer by all fruit trees planted in situations where they must necessarily be trained or restricted. All good cultivators acknowledge that the principal part of the pruning, so far as it is likely to re-act upon the roots, and consequently upon the tree's healthy development, should be done in summer. Of course it does not follow that all increase of size should be severely checked; on the contrary, a moderate and steady increase in size should be encouraged. Summer pruning may be—indeed, often is— carried too far. There must be sufficient young wood left in all trees to promote a healthy circulation. To permit a rapid extension in spring and then to trim it all off at once, as is too commonly done, is wrong in principle, no matter whether the operation be performed in July or delayed till winter. In the former case the sudden removal of the outlets for the sap may, and in many cases will, excite the embryo fruit-buds to break into growth, and thus prevent, for this year at least, all possibility of their maturation. More mischief is done in this way than is commonly supposed, though it will be easily understood that, if during the steady process of building up the fruit-buds any sudden pressure of sap takes place at a critical moment, the buds may be pushed into growth prematurely. It is easy enough to lay down a general rule for the performance of any given operation, but it is not wise in all cases to follow it, as much depends upon soil, situation, and the habit and constitution of the different subjects operated upon. But this much may be said: in no case should the young shoots, termed leaders, be shortened till autumn; nor yet any others which it may be necessary to leave to fill up vacancies, so as to make the tree perfect in shape. Leaving those terminal shoots unstopped will greatly aid the roots by promoting regular, steady, reciprocal action all through the various parts and organs of the tree. From the first week in June till the beginning of August is the best time for the thinning out or removal of summer growths; and this space of time will give sufficient latitude for the due encouragement of the weakly growers, or for the timely repression of those which are betraying a tendency to a dangerous degree of vigour. In cutting back the young wood a medium course should be pursued, not cutting so close as to cause the production of an inordinate amount of breast wood later on; nor yet leaving the spurs so long as to defeat one of the objects which we have in view, viz., converting them into fruit spurs in some future year. Usually the safe and proper course is to cut back to four or five perfect leaves. By the first week in September the trees should be gone over again, and all growths that have been made since the late July pruning should be removed to facilitate the thorough ripening of the wood generally. I have said nothing about early disbudding, because the proper season for that is past. I think, however, there cannot be a doubt that in many cases much good would be done by an early removal of all weakly growths that are never likely to be required for the proper furnishing of the tree.

E. Hobday.

Second Crops of Melons.—We frequently hear of good second crops of Melons, and even three distinct crops from the same plants; but, although such things are possible, I should, from my own experience, say that one good crop from a plant is the most profitable course to follow; if a second crop be required, fresh plants should be in readiness, and directly the crop is cut new soil should be ready to replace the worn-out material. Thus two really good crops may be gathered from each portion of pits or houses devoted to Melons during the season. Although good Melons may be grown in frames during the hottest summer months, they are of comparatively little value for the earliest or latest crops, as in our uncertain climate the use of artificial heat is an absolute necessity to insure first-class flavour in a fruit that delights in a tropical heat, and the flavour of which so much depends on the surrounding atmosphere. Span-roofed pits, with a border for soil on each side, may be planted one side at a time; and houses if span-roofed, with a central bed, may be planted at three distinct periods. By replacing each set with fresh plants as soon as the first crop was fit for cutting, I have had far more continuous and finer fruit than ever I could have got from the same plants. By a good crop on a plant, I mean from four to six fruits, according to the size of the variety; but late in the season a lighter crop must be left. Two or three fine fruit on a plant of Eastnor Castle, or any similar good sort, well ripened off as late as the end of October, by means of a good command of artificial heat, and by elevating the fruit well above the foliage to get all the benefit of the declining power of the sun's rays, will be found useful, and worth a little extra attention. Retaining the foliage in perfect health up to the period when the fruit is fit for cutting is an important point. By foliage I mean all the main leaves, which should be retained quite down to the ground on the stems of plants that are trained upon trellises. All the unnecessary weakly growths should be pinched out before they make much progress, so as to concentrate the energy of the plants in the main stems, which will in due time perfect fine fruit of the highest quality. There is no necessity for drying the plants to such an extent, to produce ripeness, as to induce red spider, the ordinary accompaniment of a Melon house so managed. There is nothing gained by leaving the fruits in the house after they commence to show signs of ripening; for, if cut at that stage and placed in a cool fruit room, a much longer supply and better flavour will be secured while the space is being utilised for another crop. Green and black fly frequently attack Melons in the early stages of growth; but they should be kept down by prompt attention to fumigation, and the best antidote to all such pests that prey on plant life is a rapid and healthy development, and that can only be secured by supplying the plants with a maximum of air, light, and heat, and a root-run of fresh turfy loam at a temperature to promote free root growth.—J. Groom.

An Early Apple.—A pretty little early Apple on the Paradise Stock in Mr. Turner's nursery at Slough, named Gladstone, is worth attention. It ripens earlier than all other Apples, is bright in colour, and of fairly good flavour. —S.

Russian Apples.—Professor Budd, of the Iowa Agricultural College, says he is testing 1000 or more varieties of Russian Apples, and if he secures a dozen late autumn and winter sorts of fair size and quality, combined with hardiness of tree requisite for the northern prairies, their value will be difficult to estimate. The trouble heretofore with this class of Apples has been their early season of ripening, hence the call for later kinds.

Plenty of Water Good for Vines.—On this point I would like to remark that, from experience and observation gathered from practising in the very wettest and the very driest of districts, I feel convinced that in districts where the rainfall does not exceed 36 in. per annum, Vines rarely ever get as much water at the root as is good for them, and have far too much supplied to the atmosphere of the Vineries by sprinklings. Where the drainage of Vine borders and the soil are as they ought to be I have never known Vines suffer from too much water in their growing season, and have known them get 6 ft. of rain in the year, besides artificial waterings in inside borders amounting to even more than 6 ft.—D. Thomson, in "Journal of Horticulture."

Berberries.—This is a Barberry season, and a fine time for the makers of Barberry wine. The evergreen species, particularly B. Darwini, B. Aquifolium, and B. stenophylla, are smothered with berries, and the birds are enjoying an unwonted feast. I am well aware that the fiery berries of B. vulgaris are the proper Barberries for wine; but I know that the purple berries of the evergreen kinds are also capital wine makers, that is, when they are made into good wine. If I could do everything I would try the berries of B. Darwini as a preserve, for I fancy they would be equal to Whortleberries; but I must content myself with a guess until I can fit up an experimental kitchen and employ an army of cooks to "tell or to hear some new thing." To make stock of Berberries will be easy work this year, and those who are not used to it may be recommended to sow the berries in boxes, and keep them where they will be constantly under observation.—S. H., in "Gardeners' Magazine."

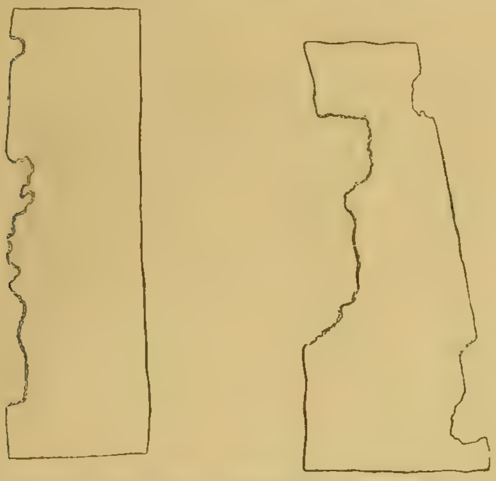
ANSWERS TO CORRESPONDENTS.

Silkworms.—I have a large stock of silkworms in cocoons, which I want to sell. Can you inform me where I can dispose of them, or if they are saleable in the cocoon state?—H. D. S. [Send half-a-dozen cocoons as a sample to Mr. S. H. Gaskell, 17, Bayley Street, Stalybridge. If they are the right sort they are saleable in the cocoon state, but there is no time to lose, as the moths emerge in about three weeks after the cocoons have spun if the weather be hot.—W.]

Names of Plants.—*Statice.*—Mr. Baines will write an article on this for The Garden shortly. *Northumberland.*—Ruellia affinis, a rather rare Brazilian stove shrub. *J. C.*—Veratrum nigrum. *C.*—Teucrium fruticans.

Gumming in Plums.—A week ago I had in my orchard house a fine tree covered with healthy fruit, and now there is not a Plum but is affected like the specimens sent. The wounds are all on the sunny side of the fruit. On opening them you will see the injury or disease seems to be in the stone, and the gum with which they are covered appears to exude from the centre.—M. S. [This is an ordinary case of gumming, a disease to which the Plum is very subject. It oftener occurs in the stems than in the fruit, but the affection is the same. Any sudden check to the flow of the sap will cause the evil.—B.]

Hylobius abietis.—I have sent you some leaves of Dracænas and Platyceriums to show the way in which they are eaten by this insect. It seems to injure not only these plants, but also Vines, the young shoots of which appear to be their favourite food.—J. Gilbert, *Duddon Hall, Lancashire.* [On examining the leaves of the Dracænas and Platyceriums I found that both had been eaten away in various places round the margin, sometimes to the depth of nearly ¼ in., thus destroying their appearance, as shown in the annexed illustrations.—W. W. S.]



Parts of gnawed leaves of Dracæna and Platycerium.

Culture of Carnations.—I should be much obliged if anyone conversant with Carnation culture would tell me how to grow them to perfection, especially the kind called Malmaison.—Amateur. [Carnations are all sufficiently hardy to withstand our ordinary English winters, but some are cultivated in pots in order to have them in flower at a time when it would not be possible to have them out-of-doors. Malmaison is doubtless the sort with very large flesh or salmon-tinted flowers named Souvenir de la Malmaison. It is classed with the Perpetual or Tree Carnations, although it does not grow so rampantly as some others. Guelder Rose (a pure white variety, with fringed petals), Empress of Germany (a very large, white flower, occasionally flaked with rose), King of the Belgians (a large, rose-coloured variety), La Belle (white, one of the best and the freest grower), Miss Jolliffe (flesh-coloured or pale pink—one of the best to produce flowers in abundance through the winter), Prince of Orange (a very strong grower with large, edged flowers), Proserpine (the best scarlet), Scarlet Defiance (a very free-blooming variety), and others that might be named require the same routine of culture. Nearly all the Tree Carnations are increased by means of cuttings struck in bottom-heat, but Souvenir de la Malmaison forms an exception; its stout, fleshy "grass" is most readily propagated by means of layering. When the layers are fairly rooted they should be separated from the parent plant and be potted in good soil, made porous by the addition of sand or pounded charcoal and a fourth part of leaf-mould. When the plants have become well-established in small pots they should be shifted into the pots (6-in. ones) in which they are to flower. Drain well with broken potsherds, and place some clean fibre, shaken from turfy loam, over the drainage to keep the particles of fine soil and sand in the compost from sifting into it. See that the soil in the pots, and also the compost used in potting, are moist, as it is well not to water for at least twenty-four hours after potting. The plants should be kept near the glass in a warm greenhouse, and they will continue to produce flowers all through the winter months. During winter, if a temperature of from 50° to 55° can be maintained, they will produce much finer blooms than in less heat. Green fly and thrips are apt to attack Carnations, but both may be destroyed by occasional fumigations with Tobacco smoke. When the flowers are opening earwigs find a secure hiding-place at the base of the petals, which they eat through and quite spoil the flowers. They can be best destroyed by looking for them with a lamp while they are feeding at night. It may be added that the following is a good compost in which to pot flowering plants, viz., four parts turfy loam, one part leaf-mould, one part rotten stable manure, and enough sharp sand to keep the whole open and porous.—J. D.

Injury to Magnolia grandiflora.—I enclose two leaves of a young Magnolia planted last October; both young and old leaves are attacked by some insect, which spoils the foliage and disfigures the plant. Can you suggest any remedy or name the insect?—M. S. [The two leaves in question are severely injured, but from what cause it is difficult to say. One, the larger leaf, has the left side nearly eaten away to the midrib, while the right side is partially eaten away at the apex, and is remarkably cracked or torn in two places, the rents nearly reaching the centre. The other leaf shows no decidedly eaten-away portion, but exhibits the same peculiar rents as noticed in the first leaf, and has besides dessicated portions, the larger of which are already attacked by a minute fungus belonging to the Sphœrias. The injury done is probably not of recent date. The peculiar tearing or rending, I think, cannot be attributed to insect action, but the portion eaten away of the largest leaf may have been caused by insects when the leaf was younger and more succulent. The small insect sent with the leaves is one of the well-known frog-hoppers, and cannot be the cause of the injury in question, having only a suctorial mouth with no power of gnawing away any portion of the leaf.—W. W. S.]

Half-hardy Salvias.—In reply to the remarks (see p. 78), I may state that the plant which I intended to describe as Salvia farinacea is, I am certain, true to name, although, perhaps, I did not describe it properly. The plant in question is not, as I before remarked, identical in colour with the plant figured in The Garden. Salvia leucantha I know equally well as I do S. farinacea; it is a totally distinct species.—W.

Salvia gigantea.—Like Mr. Harpur Crewe, I am of opinion, from the description given (see p. 78), that the plant bearing this name is S. bracteata. The latter plant when much handled emits a very disagreeable odour.—Thos. Williams.

Pyrus japonica.—Is it not unusual for this Pyrus to fruit? There is now growing in a garden here a small plant with several fruits upon it; I have not seen it fruit before.—Richard Maries, *Lytham.*

Sub-dividing Varieties of Lilies.—Now that Lilies are becoming so justly popular, the temptation to divide and sub-divide such varieties as show the most trifling difference as regards marking seems to be so great, that the task of looking through a list of so-called varieties will soon be a tedious affair. If every one who grows Lilium auratum alone, to say nothing of other sorts, were to distinguish every deviation from the type with a name, our catalogues of Geraniums and Roses would be brief compared with our lists of Lilies.—J. Groom.

Lilies Planted Out.—It may be interesting to know that I have growing here (very near the sea) Lilium auratum planted out two years, with from ten to sixteen flowers upon it; also a plant of L. Humboldti, bearing upwards of fifty flowers, and about 10 ft. high; L. californicum and the old scarlet Martagon very fine. The fine early-flowering variety L. Szovitzianum has likewise been very good, as well as many other varieties. I think it is quite a mistake to grow them in pots, except under particular circumstances.—Richard Maries, *Lytham.*

Variegated-leaved American Elm.—I saw, some few weeks ago, one of the finest specimens of this which I have ever witnessed. It is situated about the centre of the quaint village of Leek Wootton, in Warwickshire, close to the road leading from Warwick to Coventry. It is over 50 ft. in height, and measured at the base 96 in. in girth, and 6 ft. from base 84 in. It is clothed from top to bottom with foliage showing the finest silvery variegation possible, and seemed to be growing vigorously.—Robert Greenfield, *Priory Gardens, Warwick.*

The members of the National Sunday League went last Sunday by special train from Paddington to Taplow, and spent the day at Cliveden, the seat of the Duke of Westminster. The grounds were thrown entirely open.

Erratum.—For Cunninghamia trimaculata (see p. 78) read Cummingia.

THE LIBRARY.

THE NATIVE FLOWERS AND FERNS OF THE UNITED STATES.*

It is with great pleasure we have received and turned over the pages of the first five parts of this book, devoted to the illustration in colours of the flowers and Ferns of North America. Our pleasure is greater than it would be in the case of our more familiar European flowers. Yet, so far as done, these numbers contain not a few old friends of both botanic and private gardens, for the hardy flowers of America have long been among the most important flowers of our gardens. In turning over these well-printed numbers we find the Spider-wort (Tradescantia virginica), Viola cucullata, the noble Golden Columbine (a recent gain), Pachysandra procumbens (an old botanic-garden friend, bearing the ugly "English" name of "Thick-Stamen," a kind of English name better not printed), and Hellonias bullata, long grown with us, but always rare from not being grown in places wet enough. Mr. Meehan says he knows of no successful attempts at cultivating it, and adds that it is "*quite possible* it is a real swamp-loving plant," which seems odd to us, who, with a very short experience of American botany, remember it as growing in water, though, from the Moss and other plants on the surface, the place in which it grew looked somewhat like solid ground till one tried to walk on it. The Skunk Cabbage, the Moss Pink (Phlox subulata), and the poor old Virginian Saxifrage—in fact, half the plants chosen for figuring so far—are well known to those acquainted with our hardy garden flora. Among those less known and interesting are the Carolina Jasmine (Gelsemium sempervirens) of the warmer States, Nuttall's Pasque-flower (Anemone patens var. Nuttalliana), Orchis spectabilis, and the Yellow Dog's-tooth Violet (of which there is a good plate).

The plates are exceedingly well done, though sometimes the colour is not exactly true, as in Tradescantia virginica; but those who best know the difficulties of colour printing will appreciate the care and good taste shown in this book and the perfect cleanliness of the execution. The drawings are free and artistic, so far as they can be when the botanical details are drawn on the same page with the whole plate—an established custom which is wrong and the cause of spoiling the effect of many a plate. The paper and print are excellent. The descriptions are also good, though the book follows what we think the bad European fashion of saying too much about the origin of the name; what old botanists said and did, and quoting poetry of often very remote connection or none at all with the subject described. What we really want is the actual facts about the plants, so far as they are known, their distribution, the soils and localities which they frequent, and those in which they are most at home, and their uses, if they have any. What we mean is, that much of the matter, apparently thought essential in such books, is really non-essential, and not entitled to the first place. It is, for example, quite common to omit any accurate description of the stature or port of a plant, or the part which it takes in the aspects of vegetation in its native places, while we may be treated to matter more or less fanciful, as regards the origin of the name, and certain unimportant botanical details—all of which are carefully given. Mr. Meehan's book, however, is very full as to essential information, and is in all ways a good book, and a credit to both author and publisher. W. R.

THE BULB GARDEN.†

It has often occurred to us that bulbs were deserving of a special treatise, which, if well done, would be very useful to gardeners and amateurs. This is a well-printed little book, with a few coloured prints in it and some woodcuts borrowed from catalogues, but it is a most incomplete attempt to do justice to the numerous and extensive families of garden plants grouped under this name. Imagine a book on bulbs which mentions only two or three of the Scillas! Various plants are named which are not included among the bulbs, such as Lychnis fulgens; while many very important bulbs are left out, as, for instance, the Quamash-root (Camassia), the Snowflake, the Blood-root (Sanguinaria canadensis), the Trilliums, the handsome bulbous Asclepias, and Calochortus! When we have said this we need not go any further to find that not only has the author not done justice to his subject, but has literally omitted names of many of the most beautiful and important families with which he should have dealt. The book contains cultural details of some of the commoner families of bulbs. R.

REPORT ON KEW GARDENS.*

This, although dated January 1, has only just been published. It is more like what the annual report of a large national establishment should be than the meagre pamphlet of some 8 or 10 pages that did duty for a report about six or seven years ago. Last year an attempt was made to improve matters, and a pamphlet of 33 pages was the result. Very much valuable information on many subjects of the greatest importance to our colonies was collected, and for the first time the report, which was well worth perusal, could be purchased by any one. This year's report contains 20 pages in excess of its predecessor. A large sheet, showing plans illustrative of the general arrangement of the hot-water boilers of the great Palm Stove, accompanies the report, thus giving all a fair chance of judging for themselves the value of the system, a new one lately invented by Mr. Rivers. Another illustration is given, one representing the peculiar growth of the Bamia Cotton, the wonderful accounts of the productiveness of which caused such excitement amongst Cotton planters last year. As there are some statements with which we do not agree, we will comment on them. After complaining of the damage done to tender plants—such as Ferns, &c.—by large crowds of visitors, Sir Joseph Hooker expresses an "apprehension that it may eventually prove impossible to admit the public on exceptionally crowded days to visit certain of the collections, at any rate except in restricted numbers, *which must be eventually exterminated in the process*" (see p. 5). What does this extraordinary sentence mean? It is certainly ambiguous; is it the plants or the visitors which must be eventually exterminated? Seriously, however, why should the visitors on Bank holidays be deprived of the pleasure of seeing Nature in some of her most beautiful forms? Granted that a certain amount of harm is done on the four Bank holidays of the year, it is surely so small that any attempt to establish such a dangerous precedent should be viewed with grave suspicion. The letters of Sir B. Hall, when First Commissioner, to Sir W. J. Hooker hardly bear out the statement of the present Director that it has always been the aim of his father and himself to render the Gardens as attractive to the public as possible. Those who know even little of the Gardens will be surprised at the pertinacity with which we are told that the gardening staff is principally employed in looking after the visitors during the afternoon, and that the forenoon is the only time for doing the general work of the Gardens. Of course there is a small substratum of truth in this, for nothing can be done during Bank holidays; at all other times, however, the labourers may be seen at their ordinary employment just as if no visitors were about, the policemen and constables being quite able to manage the public without any assistance from the rest of the staff. We are also informed, as an additional reason for keeping the Gardens closed as at present, that permission to draw during public hours is practically useless to artists. We, however, confidently state that a request to draw during private hours was frequently refused until the recent agitation for the earlier opening of the Gardens had commenced, when the more generous policy of admitting all who give satisfactory reason for the granting of the privilege was adopted. The list of Aroids cultivated at Kew is a step in the right direction; we should like to see similar lists of the living Palms and other special groups. The names of a number of the plants of more especial interest, which flowered during the past year, are given. Most of those were noted and described in The Garden as they appeared. The rest of the report contains much valuable information for colonists and manufacturers concerning Cinchona, India-rubber, and many other plants and their products.—*

A "Control-Station," for the examination of seeds, was opened in June at the Botanical Institute in connection with the University of Leipsic, under the special personal direction of Professor Frank.

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* "The Native Flowers and Ferns of the United States." By Prof. Thomas Meehan. Boston, U.S.: Prang & Co.

† "The Bulb Garden." By Samuel Wood. London: Crosby Lockwood & Co.

* "Report on the Progress and Condition of the Royal Gardens at Kew during the year 1877." Clowes & Son, Charing Cross.

No. 351.] SATURDAY, AUGUST 10, 1878. [Vol. XIV.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

ROSES AT CHESHUNT.

Those who have not paid a visit to the Cheshunt Nurseries can form no adequate idea of their extent and attractiveness; but, as regards Roses, which, it is well known, are Messrs. Paul's speciality, some idea may be formed of the sight to be seen when it is known that nearly 50 acres are devoted to their culture alone. This year the flowers have been fairly good, and the plants are all that can be desired. Especially fine are those planted on ground which has never before grown Roses—thus showing that the Rose, like many other plants, is grateful for a change of soil. The display of bloom is now a little past its best, but it will amply repay a journey of any distance. In addition to the thousands of standards and half-standards and dwarfs of the most popular kinds, some of the older ones are not neglected, and one can see many of the original plants of some of our best English-raised Roses.

Of new Roses there is a rich collection this year, and it is satisfactory to find that many of the new kinds are noted for their profusion of bloom in the autumn. Indeed, in this class of Rose Mr. Paul has lately being paying much attention, for really good autumnal Roses are comparatively scarce. It is almost to be regretted that some of the Rose societies do not hold a show in September expressly to bring out the best kinds of autumn-blooming Roses, for these are, if possible, of more value than those produced in summer, when our gardens are rich with all kinds of flowers. Among novelties the following appeared most noteworthy:—

Marquis of Salisbury is a Hybrid Perpetual with large, many-petalled flowers of a fine rose colour, the edge being shaded with bright orange or salmon colour, and it will doubtless make a fine exhibition Rose.

Charles Darwin is a remarkably free-blooming kind, growing well on the Manetti, and giving a fine display in autumn. Its blossoms are of good form, and of a splendid crimson colour.

Duke of Teck is the most brilliant scarlet Rose ever yet raised, and it is a great advance upon the reds, of which there is such an abundance. It is a good grower, and if grown in groups pegged down, the effect, when in flower, would indeed be brilliant.

Dr. Hogg is the nearest approach to a real purple we have yet seen. It is very distinct, and will become an effective kind in the exhibition stand.

Mrs. Laxton is a fine new Rose, and Jean Liabaud is in good condition just now, its flowers being a rich black.

Mrs. Bellenden Kerr is an excellent new white autumnal Rose, and Souvenir de la Malmaison, on its own roots, is doing better than ever we remember to have seen it in any other way.

Duchess of Edinburgh, raised in the Cheshunt Nurseries, is one of the best kinds for forcing in pots. Its flowers, which are of a rich crimson, of fine form, and produced in profusion even on small plants.

A seedling kind, as yet unnamed, but the flowers of which somewhat resemble those of Charles Lefebvre, is interesting on account of its extremely vigorous growth. It makes shoots in one season as thick as a good-sized walking-stick, and from 4 ft. to 5 ft. long, and, as far as can be seen, it will make a fine Rose for growing into large untrained bushes.

Maréchal Niel, trained over the roof of a house, has borne thousands of blossoms, and from this were cut the great baskets of Roses seen at the London shows last spring. When the plant has ceased flowering all the wood is spurred in like a Vine, after which abundance of strong shoots are soon emitted, which grow on and yield a crop the next year. The flowers of Maréchal Niel are always borne freely on long sprays of medium-sized wood, and in order to provide these this method of pruning is considered the best. The plants in question are very large, their main stems being as thick as a broom-handle, and to keep these from getting "bark bound," as is often the case with Roses as well as fruit trees, the bark is scored down with a knife, a process which not only allows of the full expansion of the stems, but also causes them to break freely, even from the oldest of the wood. Another advantage in this practice of pruning is that more light is admitted in the houses. The same kind of Rose, grown in pots for planting out, grow amazingly under the shadow of those on the roof without becoming too lanky or too much drawn. S.

COLOURLESS BLOOMS OF MARECHAL NIEL.

It was with extreme interest that I read the discussion which was carried on in the pages of The Garden some few months since concerning the probable causes of the failure of some blooms of this most deservedly favourite Rose to assume that rich golden tint to which it is so desirable they should attain, and the remedies proposed for the mitigation of the evil. My interest arose from the fact that I was myself then awaiting the result of an experiment which I had made upon a fine old standard of Gloire de Dijon. This old friend, though in apparently vigorous health and a really perpetual bloomer, had in its flowers assumed a hue so pale as to be almost unrecognisable, and which called for prompt remedial measures. Those adopted were of the following nature: In the beginning of November last the surface soil, to the depth of about 2½ in., was removed, commencing about 6 in. from the stem and extending to a distance of 3 ft. all round. The remaining soil over the roots was gently loosened with a fork, and the usual annual dressing of rich, well decayed stable manure applied, over which the surface soil was then replaced and all made safe for the winter. In March, I, as usual, pruned sparingly, and about the first week in April, after having carefully and repeatedly inserted a long five-pronged fork over the roots so as to render the superincumbent soil thoroughly permeable, I applied a top-dressing of the Rose Manure, prepared by Messrs. W. Paul & Son, of Waltham Cross, being somewhat more liberal in the application than is recommended in the directions for use; and this having been washed well in by a copious drenching of water, all was made tidy, and the result patiently awaited. Of this result I am now in a position to speak, as I have now before me blooms cut from my old patient, which in size, symmetry, and depth of colouring, I have never seen surpassed. I can thus confidently recommend this manure, which, so far as my experience has gone, has decidedly both increased the size and intensified the colour of my Roses. Having applied it also to the Hybrid Perpetuals Duke of Edinburgh, Baron Haussman, Hippolite Jamain, Victor Verdier, and Magna Charta, I have been rewarded with some truly splendid flowers the tints of which are of unusual brilliancy. It may, therefore, prove not unworthy a trial by the gentleman who has had reason to complain of some little disappointment at the hands of Monsieur le Maréchal Niel, who has hitherto occupied in his friend's esteem a place so high as to be above all praise. W. B. H.

Dublin.

The Cape Gooseberry Out-of-doors.—It may be of interest to know that this delicious fruit-bearing plant, when planted in the open air, attains a far higher degree of productiveness and vigour than when grown under glass. My mode of procedure is to plant out, in a compost of rich loam and manure, fair-sized plants against a south wall, taking the precaution to nail a board about 9 in. wide at right angles to the wall over each plant. To this I nail a piece of canvas long enough to reach the ground, and this I let down in frosty or cold windy weather as a protection to the plants, and also put a mulching round the roots in winter. In the spring I give an abundant supply of weak manure water, withholding it later on, and under this liberal treatment they will grow vigorously, and will require to have the shoots stopped, as with Tomatoes. Throughout the summer the plants are in blossom and fruit, which latter, from its peculiar yet agreeable acidity, is adapted either for a dessert fruit, or for making excellent preserves. My plants have been under the above treatment several years, and have withstood the winters with impunity, and I find that they are not so liable to the attacks of insect pests as when grown under glass.—A.

SPIRÆA PALMATA ELEGANS.

Permit me to answer the criticisms which have been published in The Garden in July last (see pp. 2 and 62) against this new plant, which I put into commerce at the end of last year. Whilst I am far from wishing to suspect the impartiality and the perfect ability of your correspondents, yet in this matter, as in many others, in order to be able to express an impartial judgment, it is necessary to keep clear of a certain precipitancy. This is especially the case when it concerns a new plant weakened by extreme propagation, and the first blooming of which ought necessarily, as I understand it, to leave much to be attained. I find no fault with criticism, but when expressing an opinion publicly, which is calculated to injure respectable interests, one should be in such a position as to leave no room for injustice. Your correspondents, I think, in this case, have judged from weak specimens, and, therefore, of imperfect bloom. My experience at my own establishment proves this to me. Here the first blooms produced on plants after the autumnal and spring propagations have been very puny; but, at the present time, established plants are four times stronger than those of the Spiræa palmata, which is growing under the same conditions as regards soil and culture, and they will flower in large masses in the course of this month. I shall send you specimens of it directly they expand.

I cannot say if this second flowering in bulk is an abnormal fact; but if it were regular in certain conditions of culture, viz., planted in soil deeply broken up and fertile, and well supplied with water, I should be right in saying that the new Spiræa is not only much more vigorous, but infinitely more productive of bloom than the Spiræa palmata. The Spiræa that I have called S. palmata elegans was obtained by a person who occupies in Ghent one of the highest positions in the horticultural world, and who allowed me to "send it out." I do not say he is infallible, but it is impossible to put any doubt upon his complete good faith. Now he declares that he has not cultivated any other species of Spiræas than the S. palmata and the S. (or Hoteia) japonica, and that he has gathered and sown with his own hand the seeds which have produced the new plant. Besides, and opposed to what one would be disposed to believe from its appearance, it is not the Spiræa palmata which is the mother plant, as I had understood when the first particulars were given to me as to its origin, but it is the Hoteia japonica which has performed the office of seed-bearer. The fact is stated in the most positive manner by the producer, who is not a man to be easily misled himself or to deceive others. Now, beyond the scientific question which gives a great importance to the new Spiræa, all true amateurs, when they will have before them a vigorous and well cultivated plant, will not hesitate to declare that it is a great acquisition to our gardens. E. Pynaert-Van Geert.

Ghent.

[M. Pynaert sent us a vigorous specimen of the plant, which, however, did not come in such condition as would enable us to judge of the flowers. The plant is, no doubt, a pale variety of S. palmata.]

Viola lilacina.—This has been all the summer, and continues to be, the most charming bedding Viola in flower here, its exceedingly dwarf habit and free-blooming qualities, allied to its somewhat novel colour—a mauve-lilac—render it specially attractive in masses. It would be very effective if mixed with some silver-grey colour, such as Pelargonium Manglesi, if that were pegged down. It would also look exceedingly pretty if planted thickly with the variegated Mesembryanthemum.—A. D.

The Species of Dahlia.—My collection contains D. variabilis, D. coccinea, D. Cervantesi, D. imperialis, and D. glabrata. These are all fully described in the review of the genus given in The Garden last year. The following two species I have also, which, though not flowered yet, are very distinct from either of the preceding, and of which I can find no account, viz., D. arborea and D. Maximiliana.—A. [The last-named species was brought over by M. Roezl, and is mentioned in The Garden, Vol. X., p. 75, and Vol. IX., p. 335. For D. arborea, see Vol. V., p. 238.]

Seedling Alpine Poppies.—In reference to the note on these (see p. 114), in which the writer asks if the white and yellow forms are distinct, I may state that experience has taught me that they are not, for, by sowing seeds of plants of either colour, I have obtained seedlings with flowers of all three colours, thereby proving that they are but forms of one. There seems some confusion about the names Papaver alpinum and P. nudicaule, which are by botanists regarded as synonyms. The only difference between them is that the true Alpine Poppy is but a few inches in height, and has small leaves on the flower-stem; in P. nudicaule the flower-stem is leafless and grows much higher. Both species bear blossoms with the same variation in colour, the white form being the supposed type. The yellow form is named aurantiacum, and the deep orange colour miniatum.—W.

Veronica repens.—I have seen enough of this pretty hardy plant this season to be able fully to recommend it as a green carpet plant, and even think it preferable to the two most accepted for that purpose, the dwarf Mentha and the green Sedum Lydium. It is a dense, close-growing creeper, covering the soil as it proceeds with a perfect soft carpet of bright green foliage, and it only needs occasional lateral trimming to keep it in place. It seems to thrive well on soil that is moderately dry, as my patch of it is in a dry spot, and it covers much more rapidly than any other carpet plant. Those in want of a good carpet plant should try this mountain Veronica.—A. D.

The Lyme Grass.—In looking through the gardens of the Preston Nursery Company, on the occasion of the late flower show, I was struck by the beauty of a large clump of Elymus arenarius, a tall Grass with rather broad, long, graceful leaves of a hoary, blue-green colour. This plant is so bold and graceful in habit, and so uncommon in colour, that I can imagine it to be a most befitting subject for the adornment of the bog garden and the banks of streams and lakes, and it might even enhance the beauty of the herbaceous border; and I have seen less ornamental and less appropriate plants forming clumps and filling circular beds on the lawns of some of the best of our public and private parks.—G. Syme. [We have long tried this fine Grass, which is excellent for rough and semi-wild places, or isolated, or in groups on Grass, but it runs too vigorously at the root for beds or borders.]

The Variegated Moneywort (Sibthorpia europæa variegata).—As a suspended basket or pot plant, in a cool, shady greenhouse, or in a plant case in a room, this little British plant stands unequalled for its gracefulness and beauty. To be grown at its best it requires perfect drainage and a cool and moist atmosphere, but it is very impatient of too much moisture at the root or overhead. It may be readily propagated by division, after which process the divided plants should be kept under bell-glasses or otherwise confined for a few days. The type of this plant is also very desirable for the same purpose, though lacking the beautiful variegation of the leaves. Another little native plant which makes a charming basket plant is the Bog Pimpernel (Anagallis tenella). Treated in the same manner as the above, it produces long pendulous branches of its small round leaves and rosy blossoms in profusion.—W.

Golden Conifers.—Allow me to supplement Mr. Berry's descriptive catalogue of Golden Conifers, which appeared in your columns last week, by adding another to the meritorious list, namely, Retinospora pisifera aurea. Botanically considered, it is probably the same as the one described by Mr. Berry as R. plumosa aurea, but by those possessing microscopic vision, and from a horticultural point of view, the two forms are very distinct. The R. pisifera aurea, when better known, will be considered the better of the two for certain purposes, for planting in certain positions, inasmuch as it possesses the vigour, the handsome open habit, and the long, recurved, feathery branches of the well-known green form, and its colour is altogether brighter than that of the plumosa aurea. I may here be allowed to express my dissent from Mr. Berry's opinion that these golden varieties of Retinospora "will succeed best in a cool and rather shady situation." Place them in the shade of other objects, and they lose their character; expose them to all the light possible, and they will repay you for your kindness. Our strongest sunshine will not scorch them, provided that they have sufficient moisture at their roots.—George Syme.

At this moment in the Paris Exhibition can be seen between the galleries reserved for the vegetables and the cut flowers, and near the conservatory constructed by M. Cochu, a very happy innovation as regards some remarkably fine Phlox decussata cultivated in pots. The innovation may be thus described: In the centre of a pot sufficiently large has been planted a Phlox, the shoots of which have been laid radiating towards the rim of the pot, where they form a circle and rise vigorously, giving a strong inflorescence The number of flowering stems, sometimes reaching ten or twelve, thus disposed as a sort of crown, afford a graceful and elegant effect.—A.

NOTES OF THE WEEK.

The Vine Pest in Burgundy.—French horticulturists and wine growers are greatly alarmed owing to the recent appearance of the dreaded Phylloxera in the Côte d'Or, in the village of Mersault, in the very centre of growth of the best wines of Burgundy—the country of Pommard, Volnay, and Beaune, and not far from the Chambertin and Clos-Vougeot district. The same pest has also attacked the fine collection of 900 different species and varieties of Vines in the Dijon garden, and the Vigilance Committee of the Côte d'Or has ordered its complete destruction, the earth to be afterwards disinfected.

Early Beatrice Peach.—We learn that fruit was gathered at Cherchell, in Algeria, from this variety on June 10 in the present year. So we shall probably soon see other Peaches in early summer than those that are forced under glass.

The Paris Exhibition.—Our correspondent, Mr. J. Simpson, of Wortley Hall Gardens, has been appointed to report on horticulture for the Society of Arts at the Paris Exhibition. Mr. Simpson's love of progress in his art and independence of judgment fit him well for the work, and we look forward to some interesting notes from his visit to the Exhibition and the gardens of Paris and its neighbourhood.

Paris Exhibition.—We may remind those who, contemplating a visit to the Paris Exhibition, attach any importance to the horticultural department, that the competitions take place on the 1st and 15th of each month, and that consequently it is at those periods that take place the introduction of new specimens, or the renewal of those already shown. In making their visit coincide with those dates they will see the objects in all their freshness, an important point, especially as concerns fruits, vegetables, and cut flowers. Occasionally, in consequence of fêtes or other unforeseen circumstances, these two periods may be a day later, but they never occur before the 1st and 15th of each month.—"Revue Horticole."

The Caucasian Scabious.—What a valuable perennial this is—handsome, very large (3 in. across the flower), good in colour, and flowering throughout the summer and early autumn! It blooms for four months continuously.

Pontederia crassipes.—This is now in bloom in the Royal Botanic Gardens, Regent's Park. Its blooms last only a day or so in perfection. It will live in water in a Hyacinth glass, and in that way forms a good window plant.—R. Kennedy.

Grass in Hyde Park.—It would not be easy to find in any part of the country a fresher, softer, or greener carpet of Grass than that now near the end of the Serpentine in Hyde Park, proving that with sun, good soil, and water, the best carpet of garden turf is attainable in London. Rivalling the verdure of this turf is the foliage of three trees, the American Plane, the Honey Locust (Robinia), and the Caucasian Pteryocarya. We notice this the more particularly because the foliage of some of our native trees is either quite a dull green, or even in some cases beginning to wither.

Balsams at Forest Hill.—There is now a fine display of Balsams in Messrs. Carters' nursery at Forest Hill. The plants, which are grown expressly for their seed, number nearly 5000, and, being now all in full bloom, they present a sight not often to be seen in the way of Balsams. The flowers are large, well-formed, and varied in colour, and we notice that many of the most prominent kinds are named. As a whole, the strain is excellent, both as regards habit of plants and quality of flowers.

The Rock Abelia (A. rupestris).—This beautiful shrub, to which there was but slight reference made in the review of the genus (see Vol. X., p. 58), is now in flower with me. At present it is against an outside wall, and about 3 ft. high. It has oval, shining leaves about 1½ in. in length, and slightly toothed. The blossoms are borne in threes, and form clusters at the tips of the young shoots, and are about 1 in. long and ¾ in. wide, with a curved tube. The colour of the lower three segments of the flower is pure white, and these are hairy, whilst the upper two are hairless and of a delicate mauve tint, which contrasts agreeably with the ruddy colour of the thrice-divided calyx. It is a native of China, and was introduced about thirty years since, but is still uncommon in gardens. Certainly such a desirable shrub is deserving of more attention.—W.

A New Experimental Garden.—A proposition has been set on foot to institute a garden for experimental purposes, to be kept up by subscription. Its promoters propose to establish the garden in a central locality and within easy access of London, for the purpose of hybridising, cross-breeding, and selecting fruits, vegetables, flowers, ornamental and economic plants (chiefly hardy and half-hardy); for the raising and propagating of useful and choice novelties, scarce and little known plants of beauty and utility; and for the trial of new fruits, vegetables, flowers, &c. For the purpose of successfully carrying out the plan, endeavours are being made to secure two or three acres of good staple garden land with a limited amount of glass. Mr. Thomas Laxton, 53, Tavistock Street, Bedford, who is to be the conductor, hopes, as soon as a suitable site can be procured, to receive contributions of plants, stock, &c.

Haplophyllum patavinum.—This has been in flower for a long time and will continue for weeks to come. It is a shrubby perennial about 1 ft. in height. The flowers are borne in numerous umbels, much like Asclepias curassavica, and are of a bright shining yellow colour. It is a fine showy plant.—Max Leichtlin, *Baden-Baden.*

Hardy Plants in Flower at Colchester.—The following hardy plants are now flowering in our nurseries here, viz., Iris kumaonensis, an extremely rare kind from the mountains in the north-west provinces of India; Iris iberica, extremely late; Gladiolus Saundersi, G. dracocephalum, and G. purpureus; Hyacinthus candicans; Cummingia trimaculata; Lilium Wilsoni, L. Leichtlini, and an entirely new species; and Romneya Coulteri, very fine.—A. Wallace.

Eugenia apiculata in Ireland.—This is now in bloom in Merrion Square, Dublin, where about five or six years ago I planted it in a sheltered but open border, doubtful as to its success. Without any special protection it has, however, never suffered more than at occasional browning of some of the tips of its shoots in spring. In has not flowered every summer, but it has now abundance of bloom on it, and it is a compact, symmetrical, and very pretty little shrub about 3 ft. high.—John Adair, *Dublin.*

Nicotiana acutifolia.—There is just now a very striking specimen of this plant in flower here from Uruguay. From a neat rosette of leaves rises a freely branching flower-stem to a height of 3 ft. The flowers are sparingly dispersed along the main branch, and the branchlets, from fifteen to twenty, opening at one time. They are star-shaped and measure 1½ in. across on a tube 4 in. long; they are beautifully white, opening in the afternoon and fading the next morning, when they are succeeded by others. The effect of these beautiful white shining flowers when seen at dusk is really remarkable. It is an annual of easy cultivation, and altogether a very desirable plant.—Max Leichtlin, *Baden-Baden.*

The Viceregal Gardens.—We learn from the "Gardeners Record" that the Viceregal Gardens at Dublin are now being conducted partially on the market garden principle, which does not seem to give satisfaction to the citizens or the critics.

Cultivated Arums at Kew.—As an appendix to the report of Kew Gardens for 1877, lately published—which contains much useful and interesting information on economic botany of an authentic character—a list of the Arums growing in the Gardens is given. This has been prepared by Mr. E. N. Brown, of the Kew Herbarium, and contains nearly 250 species.

Some wonderful examples of flower gardens and flower-beds have been engraved and published of late. In the presence of such amusing sketches, horticultural literature can scarcely be considered "dry."

The late Mr. Henry Parnall, the clothier, 187, Bishopsgate Street, has bequeathed £1000 upon trust to the vicar and churchwardens of St. Botolph, Bishopsgate Without, the dividends thereon to be applied to maintaining and keeping up as a garden the churchyard of the parish, and to the planting and renewing the trees, shrubs, and flowers.

Leptospermum lanigerum.—This is now producing its white flowers freely on a wall here, but the plant itself is not so free in growth as some of the other species. It has a somewhat prostrate habit, but it is distinct and desirable on account of its flowering at this time of year.—T. Smith, *Newry.*

Aristolochia altissima.—This desirable hardy evergreen climber has glossy leaves which are produced in a dense manner, and it bears curious chocolate and yellow flowers in the axil of every leaf; it is of free growth, having made about 1 ft. this season. Two other species, A. Kæmpferi and tomentosum, are also distinct and desirable rapid growing climbers for warm situations; the three are totally distinct from each other.—T. Smith, *Newry.*

Tuberoses Out-of-doors in the Isle of Wight.—I wish to know if any of your numerous readers can say whether Tuberoses will winter well in the ground out-of-doors. They are now blooming very freely in the open air. I send an example.—J. B. [A very fine massive specimen was received with this]

Elymus glaucus.—Allow me to speak a word of praise for this really distinct and useful Grass. In colour it is quite unlike any other, being bluish-green, and it extends itself freely in every direction. It succeeds both in wet and dry places; in fact, it seems to grow anywhere; and ultimately it becomes a densely matted mass from 2 ft. to 3 ft. high. I may add, too, that in addition to its value from a decorative point of view, it makes a first-rate corner plant.—T. Smith, *Newry.*

Cool Orchids from Columbia.—Mr. Horsman, of the Colchester Nurseries, has just arrived from a collecting tour in the high altitudes of Columbia, South America, with thousands of the best varieties of cool Orchids, to wit, Odontoglossum Pescatorei, Phalænopsis, coronarium, &c., and a number of other choice kinds; also a new double Amaryllis of great beauty.

NOTES FROM KEW.

Hardy Shrubs.—The St. John's-worts are among the most valuable of late summer-flowering shrubs; we now enumerate the best of those in the Kew collection. Hypericum hircinum, a South European kind, which makes an excellent plant for the wild garden or for the borders of plantations, has large leaves, and grows about 6 ft. or 8 ft. high; the rather small flowers are produced most freely. H. chinensis, about 3 ft. high, is a pretty shrub, with good-sized, bright yellow blossoms, which are rendered very conspicuous by the long stamens. H. uralum, from Nepaul, attains a height of 3 ft. or 4 ft., and has oval leaves and pale yellow flowers, much larger than those of the next two species. H. prolificum and H. Kalmianum are two kinds from North America; both have narrow, Willow-like leaves and small yellow flowers; the former grows about 2 ft. high, while the latter is a shrubby plant at least 5 ft. high. H. oblongifolium, a handsome Nepaulese bush, is a near ally of H. patulum, and is certainly one of the most attractive of the hardy shrubs at present in flower; it grows 5 ft. high or more, and the large flowers, borne in great abundance, make a fine show. Desmodium Dilleni, though very frequently killed down to the ground during our winter, springs up freely from the roots and makes a mass of shoots, about 3 ft. long, terminated by panicles of purple Pea-shaped blossoms; for the front of the shrubbery this is a useful plant. Dorycnium ibericum, from the Mediterranean region, is a pretty member of the Pea family, which forms a compact bush, about 2 ft. high, the long-stalked heads of small, white, Clover-like flowers making up in numbers what they lack individually.

Hardy Herbaceous Plants.—One of the most striking and beautiful of the Mint family is the Siberian Nepeta macrantha; it grows about 3 ft. high, has very large dark blue flowers, and is by far the finest species of the genus. Pentstemon Torreyi, a North American kind, sometimes grows 7 ft. high, though the Kew plant is only 5 ft.; it somewhat resembles the old P. barbatum, but is much taller; the tall panicle of bright scarlet blossoms is very handsome. Antirrhinum rupestre is a neat-habited annual about 6 in. high; it has small, hairy leaves and large, pink flowers. Mimulus ringens, although introduced to English gardens from North America more than a century ago, is not frequently met with now; it grows 1 ft. or more in height and flowers freely, the colour of the blossoms being light blue. Campanula Langsdorfi, a dwarf sort, with long, grassy leaves and long-stalked, purple flowers, is not the least desirable of the Bell-flowers. A charming Composite is the New Holland Podolepis rugata; it grows 1½ ft. high, and bears numerous large heads of bright yellow flowers. Erigeron mucronatum, a Mexican Composite, forms compact masses covered with Daisy-like flower-heads, pink on opening, but changing to white as they grow older; this beautiful plant is sometimes met with under the name of Vittadenia triloba, with which, however, it has nothing to do. The best of the Globe Thistles at present in flower are Echinops sphærocephalus, E. ruthenicus, and E. Ritro; all have Thistle-like leaves and flowers arranged in dense clusters at the ends of the branches; the first, 5 ft. high, has pale blue blossoms; those of the next, which grows about 4 ft., are deep blue; the last, also with deep blue flowers, is only half the height of the preceding. Kniphofia Macowani, a small kind with spikes of bright, orange-red flowers, is an exceedingly pretty plant; it is found in a wild state in Grassy places of the Boschberg Mountains, Cape of Good Hope, at elevations of from 4000 ft. to 5000 ft. Eupatorium ageratoides, a Hemp Agrimony from North America, grows 3 ft. high and is covered with white flowers; it is a very useful perennial. Two of the prettiest of the Sea Hollies are Eryngium blandum and E. giganteum; the latter, an oriental species, has steel-gray leaves and Thistle-like heads of whitish flowers borne on stems 3 ft. high; the former more resembles our native kind E. maritimum, and grows 2 ft. high. A distinct and handsome Himalayan Aconite is Aconitum ferox; its dark purple flowers are very conspicuous. Centaurea Delestrei, a recently introduced sort, has narrow leaves and beautiful feathery heads of mauve-coloured blossoms; it grows to a height of about 2 ft.

Greenhouse Plants.—One of Messrs. Veitch's African novelties, Hæmanthus Kalbreyeri, is a fine greenhouse plant, the large globular head of deep crimson flowers, borne on a purple-spotted scape, being very handsome. Rhododendron Brookeanum gracilis is a fine shrub with pale sulphur-yellow blossoms; the type is a native of Borneo, and Mr. Low, in speaking of it, says, "I shall never forget the first discovery of this gorgeous plant; it was epiphytal upon a tree which was growing in the waters of a creek. The head of flowers was very large, arranged loosely, of the richest golden yellow, resplendent when in the sun; the habit is graceful, the leaves large." Musschia aurea, a native of Madeira and Teneriffe, is a very handsome Bell-flower with a candelabra-like panicle of upright golden-yellow blossoms.—†

A THAMES-SIDE GARDEN.

(GREENLANDS, HENLEY-ON-THAMES.)

As we have often pointed out in The Garden, it is not to the large country seats of great families that one must look for good design in gardens, and Greenlands is one of the places that illustrate the truth of the remark. Originally laid out by Mr. Marnock for Mr. Marjoribanks, it has been ever since we knew it a model of good taste and good keeping. Since coming into the possession of Mr. W. H. Smith it has been very much improved, and in various departments the gardens have been much extended. The situation of the house by the river is well shown in our engraving. The various pretty river and other views from the house must be left to the imagination. As will be seen, there are no terrace gardens, no walls for stucco or terra-cotta vases; one passes easily from the house to a pleasant lawn, which slopes gently till it touches the river. From this lawn one passes easily to the wide and well-planted grounds around, studded with numerous fine trees, among which are beautiful groups of Cedars and one huge and very picturesque Walnut. It may be noticed that the common fashion of a garden in front of the house is here avoided altogether; but at some little distance there are various flower gardens which, without being exactly under the windows, are within very easy reach, and as richly stored with flowers and flowering shrubs as anybody could desire. It need scarcely be pointed out that this plan keeps the lawn immediately in front of the house fresh, unbroken, and quiet, instead of what it too often is—patched with brown earth or not always happy masses of flowers. There are two excellent kitchen gardens and many plant and fruit houses, all in the best order and well cultivated. In the houses the Bougainvillea is very successfully grown planted out. In the kitchen garden we noticed a beautiful hedge of various new kinds of Clematis, a mass of flower trained on wire fencing. The houses for the gardener and young men are models of their kind. As before remarked, the gardens were designed by Mr. Marnock, whose ideas have been well carried out by Mr. Good, who has been gardener and bailiff here for twenty-four years. B.

Streptocarpus floribundus.—This plant might almost be termed a hardy Gloxinia, and is a very charming flower. It is little known, but if all lovers of good plants knew of its excellent qualities, there are few who would not cultivate it. I cannot assert that it is hardy out-of-doors, but I have had it blooming freely in a pan in the open air for some time, and I look for it to continue in bloom for several weeks yet. It comes true and quickly from seed. My present plants are from seed sown on the 1st of November last in a gentle warmth, and were kept in a cool house all through the winter. I should think it would thrive well on rockwork, where, if needed, the crowns could be protected during the winter.—A. D.

The Portuguese Sundew (Drosophyllum lusitanicum).—This peculiar plant, which is reputedly insectivorous, much resembles the Cape Sundew. It has narrow leaves from 3 in. to 6 in. in length, densely covered with glandular hairs, and, when young, they roll inwards, much in the same manner as Fern fronds. Its mode of treatment in cultivation is in direct opposition to that of the other Sundews, which inhabit bogs and other moist places. It is found on dry, sunny banks in Portugal; therefore requires all the exposure to direct sunlight that we can afford in this climate. My plants, including some raised from seed this season, are plunged in ashes in the open air, with flat pieces of glass over each plant, placed in a slanting position about 6 in. above them, to protect them from rain, and they are growing vigorously. The second year the plants will flower, after which they will throw out offshoots, which, if taken off and treated as cuttings—but keeping them rather dry—will soon take root and make good plants. Seeds may be procured from some seedsmen, and should be sown in the beginning of the year; they are in the soil about three months before germinating, and when large enough should be potted off in small pots. The soil I find best suited to them is a mixture of fibry loam, finely broken charcoal, and sandstone in equal parts. The pots must be thoroughly drained and care taken in watering, for if allowed to become too moist, with a little sunshine the plants will damp off. I winter the plants in a dry unheated frame with a bell-glass over each plant. The ill success in the culture of this plant appears to me to be owing to growing it under glass in company with bog plants.—W.

THE PRINCIPAL TYPES OF HARDY EXOTIC FLOWERING PLANTS FOR THE WILD GARDEN.

(A Chapter from the re-Written "Wild Garden.")*

Acanthus (Bear's-Breech).—Vigorous perennials with noble foliage; mostly from Southern Europe. Long cast out of gardens with other fine plants, they are now beginning to receive more of the attention they deserve. In no position will they look better than carelessly planted here and there on the margin of a shrubbery or thicket, where the leaves of the Acanthus contrast well with those of the ordinary shrubs or herbaceous vegetation. Though quite hardy in all soils, they flower most freely in free, loamy soils. Not varying very much in character, all obtainable hardy species would group well together. The most vigorous kind at present in cultivation is one called A. latifolius, almost evergreen, and a superb hardy plant when well established. Few plants are more fitted for adorning wild and semi-wild places, as they grow and increase without care and are for foliage or bloom unsurpassed by any of the numerous plants that have been so long neglected through their not being available in any popular system of "flower gardening." They will be equally effective in grassy places or associated with low shrubs.

A Thames-side Garden (Greenlands, Henley-on-Thames).

Achillea (Yarrow).—A numerous family of hardy plants spread through Northern Asia, Italy, Greece, Turkey, Hungary, &c., but more in Southern than in Central or Northern Europe. In the Alps and Pyrenees numerous species are found. The Golden Yarrows (A. eupatoria and A. filipendula) are stately herbaceous plants, with broad handsome corymbs of brilliantly showy flowers, attaining a height of 3 ft. or 4 ft., and growing freely in any soil. These are well worthy of naturalisation. Various other Achilleas would grow quite as well in copses and rough places as the common Yarrow, but we know of none more distinct and brilliant than the preceding. The vigorous white-flowering kinds are superb for shrubberies where their numerous white heads of flowers produce a singularly pleasing effect under the foliage in summer. With few exceptions these plants have never been grown out of botanic gardens, many of them being thought too coarse for the mixed border. They are, nevertheless, remarkably beautiful both in flower and foliage, and many effects never before seen in gardens may be obtained by massing them under trees in shrubberies or copses, as a rule allowing one species to establish itself in each place and assume an easy, natural boundary of its own. The small Alpine species would be interesting plants for stony or bare rocky places.

Aconitum (Monkshood).—These are tall, handsome perennials with very poisonous roots, which make it dangerous to plant them in or near gardens. Being usually very vigorous in constitution, they spread freely, and hold their own amongst the strongest herbaceous plants and weeds; masses of them seen in flower in copses or near hedgerows afford a very fine effect. There are many species, all nearly of equal value for the wild garden. Coming from the plains and mountains of Siberia and Northern Europe and America, they are among the hardiest of plants. When spreading groups of Aconites are in bloom in copses or open spaces in shrubberies, their effect is far finer than when the plants are tied into bundles in trim borders. The old blue-and-white kind is charming in half-shady spots, attaining stately dimensions in good soil. The species grow in any soil, but are often somewhat stunted in growth on clay.

Ajuga (Bugle).—Not a very numerous family so far as represented in gardens, but some of the species are valuable for the wild garden, notably Ajuga genevensis, which thrives freely in ordinary soils in open and half-shady places among dwarf vegetation, and affords beautiful tufts and carpets of blue. It spreads freely and is hardy everywhere. The plants mostly come from the cool uplands and hills of the temperate regions of Europe and Asia.

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*This will contain many Original Illustrations by Mr. Alfred Parsons.

Allium (Garlic; Onion).—A most extensive genus of plants scattered in abundance throughout the northern temperate and Alpine regions of Europe and Asia, and also in America. Some of the species are very beautiful, so much so, as to claim for them a place in gardens notwithstanding their disagreeable odour. It is in the wild garden only, however, that this family can find a fitting home; there species that do not seem attractive enough for the garden proper would afford novel effects at certain seasons. One of the most desirable effects to produce in the wild garden would be that of the beautiful white Narcissus-like Allium of the south of Europe (A. neapolitanum). The sheets of this in the Lemon orchards of Provence will be remembered with pleasure by many travellers. It would probably only thrive in warm and sandy soils, but there is an allied species (A. ciliatum) which would do well in any soil, affords a similar effect, and produces myriads of star-like white flowers. Numerous singular effects may be produced from species less showy and more curious and vigorous.

Alstrœmeria.—All who care for hardy flowers must admire the beauty of Alstrœmeria aurantiaca, especially when it spreads into bold healthy tufts, and when there is a great variety in the height of the flowering stems. A valuable quality of the plant is, that in any light soil it spreads freely, and it is quite hardy. For dry places between shrubs, for dry or sandy banks (either wooded or bare), copses, or heathy places, this plant is admirable. I have noticed it thriving in the shade of trees. It is interesting as being a South American bulb, thriving freely in the wild garden where the soil is sandy or light.

Althæa (Marsh Mallow).—These are plants never seen out of botanic gardens now-a-days, and yet, from their vigour and showy flowers, they may afford unique effects in the wild garden. The common Hollyhock in its single form is an Althæa, and it is typical of the vigorous habit and the numerous showy flowers of other rampant species, such as A. ficifolia. A group of these plants would be very effective seen from a wood walk, no kind of garden arrangement being large enough for their extraordinary vigour. It is not a numerous genus, but there are at least a dozen species, principally found on the shores and islands of the Mediterranean, and also in Western Asia.

Alyssum (Madwort).—In spring every little shoot of the wide tufts and flakes of these plants sends up a little fountain of small golden flowers. For bare, stony, or rocky banks, poor sandy ground, and ruins, they are admirable. Alyssum Wiersbecki and A. saxatile are strong enough to take care of themselves on the margins of shrubberies, &c., where the vegetation is not very coarse, but they are more valuable for rocky or stony places, or old ruins, and thrive freely on cottage garden walls in some districts; some of the less grown species would be welcome in such places. There are many species, natives of Germany, Russia, France, Italy, Corsica, Sicily, Hungary, and Dalmatia; Asia, principally Siberia, the Altia Mountains, Georgia, Persia, and the entire basin of the Caspian is rich in them.

Anchusa (Alkanet).—Tall and handsome herbaceous plants, with numerous flowers of a fine blue, admirable for dotting about in open places, in sunny glades in woods or copses. They mostly come from Southern Europe and Western Asia. A. italica and A. capensis are among the most useful. The English Anchusa sempervirens, rare in some places, is an excellent wild garden plant.

Anemone (Windflower).—A numerous race of dwarf herbs that contribute largely to the most beautiful effects of the mountain, wood, and pasture vegetation of all northern and temperate climes. The flowers vary from intense scarlet to the softest blue; most of the exotic kinds would thrive as well in our woodlands and meadows as they do in their own. There is hardly a position they may not adorn—warm, sunny, bare banks, on which the Grecian A. blanda might open its large blue flowers in early spring; the tangled copse, where the Japan Windflower and its varieties might make a bold show in autumn; and the shady wood, where the Apennine Windflower would contrast charmingly with the Wood Anemone so abundantly scattered in our own woods. The Hepaticas should be considered as belonging to the same type, not forgetting the Hungarian one, A. angulosa. The Hepaticas thrive best and are seen best in half-woody places, where the spring sun may cheer them by passing through the branches, which afterwards become leafy and shade them from the scorching heats of summer. This fair family comprises about eighty species, the greater part belonging to the Northern Hemisphere of the Old World. Many species are Asiatic, chiefly coming from Siberia and Daouria. Some are peculiar to China and Japan, while others grow in the mountains of Nepaul or on the slopes of the Caucasus. Europe is, after Asia, the home supporting the most Anemones; about twenty are found dispersed through France, Switzerland, Germany, Greece, and Spain. Some of the European species are also found in Siberia and in South America, while others from the basin of the Mediterranean attain the shores of Morocco. North America, particularly Carolina, Pennsylvania, and Hudson's Bay, have sixteen species, while South America has only five. The Anemones have two zones of preference on the globe—the banks of the Mediterranean and the colder regions of Europe, Siberia, and North America.

Anthericum (St. Bruno's Lily).—One of the most lovely aspects of vegetation in the Alpine meadows of Europe is that afforded by the delicate white flowers of the St. Bruno's Lily in the Grass in early summer, looking like miniature white Lilies. All who have seen it would no doubt like to enjoy the same in their turfy lawns or Grassy places, and there should be no difficulty in establishing it. The large-flowered or major variety might be tried with advantage in this way, and the smaller-flowered kinds, A. liliago and its varieties are equally suitable. They are not so likely to find favour in gardens as the larger kind, and therefore the wild garden is the home for them, and in it many will admire their graceful habit and numerous flowers. All the species best worth growing are natives of the Alpine meadows of Europe.

Antirrhinum (Snapdragon).—The common Snapdragon and its beautifully spotted varieties are easily naturalised on old walls and ruins by sowing the seed in old or Mossy chinks. Antirrhinum Asarinum, rupestre, and Molle do perfectly well treated in the same way. Probably many other species would be found good in like places. About two dozen species are known, but comparatively few of these are in cultivation. They mostly come from the shores of the Mediterranean.

Aquilegia (Columbine). — Favourite herbaceous plants, generally of various shades of blue and purple, white, and sometimes bright orange. The varieties of the common kind (A. vulgaris), which are very numerous, are those most likely to be naturalised. In elevated and moist districts some of the beautiful Rocky Mountain kinds would be worth a trial in bare places. In places where wild gardens have been formed the effect of Columbines in the Grass has been one of the most beautiful that have been obtained. The flowers group themselves in all sorts of pretty ways, showing just above the long Grass, and possess great variety of colour. The vigorous and handsome A. chrysantha of Western America is the most hardy and enduring of the American kinds, and would be well worth a trial in the wild garden. The species are of a truly northern and Alpine family, most abundant in Siberia.

Androsace (Androsace).—An exquisite family of little plants which have never yet been grown with success in gardens generally, owing to the conditions of lowland gardens being so unlike those they enjoy in their native localities. I believe they could be easily naturalised in a well-chosen bit of mountain. No experiment in the way of wild gardening would be more interesting. Crevices in rocks, in which they would have no competitors for the scanty soil, would suit them well, as would also bare spots among the rocks, with their deep gritty, or sandy, but not boggy soil. The species of this genus, to the number of more than forty, embellish the rocks of high mountains and the regions approaching the Pole. Europe has nearly twenty—in the Alps, the Pyrenees, and the mountains of Greece—and an equal number live in Asia, chiefly in Siberia, after which come India, Nepaul, China, the Caucasus, Persia, and the Levant. North America has several known species extending to the Arctic part of that continent.

Arabis (Wall Cress).—Dwarf Alpine plants, spreading in habit, and generally producing myriads of white flowers, exceedingly suitable for the decoration of sandy or rocky ground, where the vegetation is very dwarf. With them may be associated Cardamine trifolia and Thlaspi latifolium, which resemble the Arabises in habit and flowers. All these are particularly suited for association with the purple Aubrietias, or yellow Alyssums, and in bare and rocky or gravelly places, old walls, sunk fences, &c. These pretty plants, numbering about sixty species, belong to the north temperate zone, chiefly Europe. The Arabis is known in all parts of Europe, from Lapland and the coldest quarters to Spain, Sicily, and the Grecian Islands. It is in the mountain chains and at a great elevation that they best develop themselves; so the Alps, the Pyrenees, the Carpathians, and, above all, Switzerland and Carinthia are the best peopled with these elegant plants.

Arenaria (Sandwort).—A most important family of plants for the wild garden, though perhaps less so for lowland gardens where more vigorous types flourish. There are, however, certain species that are vigorous and indispensable, such as A. montana and A. graminifolia. The smaller Alpine species are charming for rocky places, and the little creeping A. balearica has quite a peculiar value, inasmuch as moist rocks or stones suffice for its support. It covers such surfaces with a close carpet of green, dotted with numerous star-like flowers. Some of the smaller species, such as Arenaria cæspitosa (Sagina glabra var.), better known as Spergula pilifera, might be grown in the gravel, and even used to convert bare and sandy places into carpets of Mossy turf. In certain positions in large gardens it would be an improvement to allow the very walks or drives to become covered with very dwarf plants—plants which could be walked upon with little injury. The surface would be dry enough, being drained below, and would be more agreeable to the feet. Removing any coarse weeds that established themselves would be much easier than the continual hoeing and scraping required to keep the walk bare. Of course this only refers to walks in rough or picturesque places—the wild garden and the like—in which formal bare walks are somewhat out of place. Nearly 200 species of Sandworts are spread over the world, Europe having about half of these, for the most part from countries round the Mediterranean and its islands. Other series abound in the Alps, the Pyrenees, and the Caucasian range, and through the hills of central Europe. Many come from northern Asia and America. In fact, all temperate and cold regions of the northern hemisphere are embellished by these light and graceful plants.

Armeria (Thrift; Sea Pink).—Charming plants, the stouter kinds producing much showy bloom in early summer. Some of them are easily naturalised in good ground, and the very dwarf-cushioned Alpine species is one of the most delightful subjects people fortunate enough to have rock gardens could concern themselves with. The genus comprises about thirty species, found in Alpine, Arctic, and maritime north temperate regions, and in Chili. Separated from Statice chiefly on account of their inflorescence, which gives them a peculiar habit.

Arum (Cuckoo-pint; Lords and Ladies).—Mostly a tropical and sub-tropical family, some of which grow as far north as southern Europe. These are quite hardy in our gardens. The Italian Arum is well worthy of a place in the wild garden, from its fine foliage in winter. It should be placed in sheltered half-shady places where it would not suffer much from storms. The old Dragon plant (A. dracontium) grows freely enough about the foot of rocks or walls in sandy, or dry, peaty places. The nearly allied Arum Lily (Calla ethiopica) is quite hardy as a water and water-side plant in the southern counties of England and Ireland.

Asclepias (Silkweed).—Usually vigorous perennials, with very curious and ornamental flowers, common in fields and on river banks in North America and Canada, where they sometimes become troublesome weeds. Of the species in cultivation, A. Cornuti and A. Douglasi could be naturalised easily in rich deep soil in wild places. The showy and dwarfer Asclepias tuberosa requires very warm sand soils to flower as well as in its own dry hills and fields. A good many of the hardy species are not introduced; for such the place is the wild garden. Some of them are water-side plants, such as A. incarnata, the Swamp Silkweed of the United States.

Asphodelus (Asphodel).—The Asphodels are among the plants that have never been popular in the mixed border, nor are they likely to be so, the habit of the species being somewhat coarse and the flowering period not long, and yet they are of a stately and distinct order of beauty, which well deserves to be represented in open spaces, in shrubberies, or on their outer fringes. The plants are mostly natives of the countries round the Mediterranean, and thrive freely in ordinary soils.

Aster (Michaelmas Daisy).—A very large family of usually vigorous, often showy, and sometimes beautiful perennials, mostly with bluish or white flowers, chiefly natives of North America. Many of these, of an inferior order of beauty, used to be planted in our mixed borders, which they very much helped to bring into discredit, and they form a very good example of a class of plants for which the true place is the copse, or rough and half-cared-for places in shrubberies and copses, and by wood walks, where they will grow as freely as any native weeds, and in many cases prove highly attractive in late summer and autumn. Such kinds as A. pyrenæus, amellus, and turbinellus are amongst the most ornamental perennials we have. With the Asters may be grouped the Galatellas, the Vernonias, and also the handsome and rather dwarf Erigeron speciosus, which, however, not being so tall, could not fight its way among such coarse vegetation as that in which the Asters may be grown. Associated with the Golden Rods (Solidago)—also common plants of the American woods and copses—the best of the Asters or Michaelmas Daisies will form a very interesting aspect of vegetation. It is that one sees in American woods in late summer and autumn when the Golden Rods and Asters are seen in bloom together. It is one of numerous aspects of the vegetation of other countries which the "wild garden" will make possible in gardens. To produce such effects the plants must, of course, be planted in some quantity in one part of a rather open wood, and not repeated all over the place or mixed up with many other things. Nearly 200 species are known, about 150 of which form part of the rich vegetation of North America. These fine plants inhabit that great continent, from Mexico—where a few are found—to the United States and Canada, where they abound, and even up to the regions altogether Arctic of that quarter of the world.

Astragalus (Milk Vetch).—An enormously numerous family of beautiful hardy plants, represented to but a very slight extent in our gardens, though hundreds of them are hardy, and many of them among the most pleasing of the many Pea flowers which adorn the hills and mountains of the northern world in Asia, Europe, and America. They are mostly suited for rocky or gravelly situations, or bare banks, though some of the taller species, like A. galegiformis, are stout enough to take care of themselves among the larger perennials. This plant is valuable for its handsome port and foliage, though its flowering qualities are not such as recommend it for the garden proper. The numerous species from the Mediterranean shores and islands could be successfully introduced on banks and slopes in our chalk districts and in rocky places.

Astrantia (Masterwort).—This is an elegant genus, of which few species are known, five being European—found in Italy, Carinthia, Greece, and the centre of Europe—others from Northern Asia. They are among the few umbellates with attractive and distinct flowers, and yet they are rarely seen in gardens. In the wild garden they are quite at home among the Grass and medium-sized herbaceous plants, and partial shade prolongs their quaint beauty. In fact they are far more at home in the thin wood or copse than in the open exposed mixed border.

Aubrietia (Blue Rock Cress).—Charming dwarf Alpine plants, with purplish flowers, quite distinct in aspect and hue from anything else grown in our gardens, and never perishing from any cause, except being overrun by coarser subjects. They are admirable for association with the Alyssums and Arabises in any position where the vegetation is very dwarf, or in rocky bare places. There are several species and varieties, all almost equally suitable, but not differing much in aspect or stature from each other. The Aubrietias come chiefly from the mountains of Greece, Asia Minor, and neighbouring countries. Wherever there is an old wall, or a sunk fence, or a bare bank, evergreen curtains may be formed of these plants, and in spring they will be sheeted with purple flowers no matter how harsh the weather. W. R.

SCHOOL GARDENS AT MARLBOROUGH.

It has often been noticed how the love of gardening and interest in gardens have of late years progressed in this country. I had lately an opportunity of observing this progress in a place where some people would have hardly expected to find it, viz., at a public school. As I was to be at Marlborough on prize day, one of the masters, who has in his own garden many interesting Alpine and herbaceous plants, asked me to assist in the judging at their flower show. One of the prizes was "for the best kept kitchen and flower garden, showing superior cultivation in all departments" (glass excluded), and for this seven of the master's gardeners competed. The general schedule of the show included plants, fruit, cut flowers, and vases of wild flowers. The gardens were most creditable; in addition to the three prizes offered we had to highly commend two others. The first and second prize gardens were within the gardening power employed upon them, and were admirably kept; the third was not only well kept, but had a considerable collection of very interesting plants; some of the others were very good. In one garden I noticed some well-kept "boys' gardens." The show (not a large one) was held in a field adjoining the head master's pretty house and lawn; the situation was favourable, and many of the exhibits were good. Being summoned home suddenly, I had not time to study as thoroughly as I had hoped all the objects exhibited, but the principal ones, and those on which there could be any question, were judged before I left. I never before saw wild flowers so well arranged; many of the bouquets were beautiful; cut flowers in bunches, perennials and annuals, were very good, the first prize lot beautiful. It was very pleasant in chapel to see so many of the boys and young men with "button holes." The Marlborough people ought to have good taste with Savernake Forest so near. It was my good fortune in spring to visit, in three successive weeks, three of the most beautiful woods in the country—Windsor, Richmond, and Savernake—and I thought that Savernake was in some respects the most beautiful of the three. I should add that the bouquets were arranged with great taste, and a decorated dinner-table was much admired by the judges.

Heatherbank, Weybridge Heath. George F. Wilson.

International Horticultural Exposition.—On the 25th of August an International Horticultural Exposition will be opened at Versailles, on the date of the visit to Versailles of the International Horticultural and Botanical Congress, meeting at the Trocadero at Paris. This exposition promises to be a great success. The French Government has offered a magnificent Sèvres vase for the grand prize, besides medals and prizes worth from 800 to 250 francs and lower, for competition among exhibitors in the 100 classes which are open. Messrs. Veitch, Wills, Linden, Van Geert, and the principal horticulturists and amateurs in France have accepted the office of jurymen at this exposition, or, as it may well be termed, this horticultural fête. Particulars and programmes can be had on application to Mons. Truffaut, Horticulturist, and Secretary of the Exposition, Versailles.

Lambeth Palace Park.—Would it not be an inestimable boon to the inhabitants of Southwark if, during these hot summer months, the fine park adjoining Lambeth Palace, some 18 acres in extent, which is now so jealously guarded, were opened to them for at least a few hours in the day? The nearest breathing spot for the poor of this district, pent up in low-lying and unhealthy dwellings, is Kennington Park. Is it not an anomaly that in so over-crowded a district there should be an extensive park, but rarely used by its owner, and to which the public has no access?—Pro Bono Publico, in "Echo."

A Good White Lobelia.—The best white Lobelia of the speciosa type is one named White Perfection. It keeps on flowering for a long time, and stands drought with impunity.—S.

TREES AND SHRUBS.

THE LINDEN.

The genus Tilia, trees characterised by their delicate, lopsided, heart-shaped leaves, gracefully toothed at their margins, and the curious, broad, membranous bract adherent to the flower-stalk, would not be known to the primitive Aryans, since it is confined to the north of America and Asia, and is irregularly represented in Europe. Thus, while the Roman named it Tilia, the Teuton, perhaps already aware of the tough "liber" or "bast," reminding him of the "lin" or "lint" (Linum), named it also "linta," "linde," or "lind." The first of these is the old German form, the second the modern, whilst the third is common to early English, Swedish, and Icelandic. But several forms are included under this popular name. Linnæus, or Karl Linné, who derived his name from one of these trees growing near his ancestral home, very plausibly ranked them all as merely forms of one species, Tilia europæa; but four forms may be distinguished in England, of which one only can claim to be indigenous. This is T. parvifolia, a small tree, a native of Siberia and of all Europe, except Turkey and Greece. The leaves are seldom over $2\frac{1}{2}$ in. in diameter, and the fruit is faintly ribbed when ripe. It occurs in woods from Yorkshire southwards. Then there are the three larger forms, T. intermedia (D. C.), distinguished by its smooth twigs and unribbed, spherical fruit; T. grandifolia (Ehrhart), with downy twigs and from three to five prominent ribs on the fruit, and its variety T. corallina, with a reddish-brown bark to the young branches. The last two are confined to Europe south of Denmark. Evelyn encouraged the plantation of Limes in London and elsewhere, and the fine avenue at Ashstead Park, Surrey, is said to owe its existence to the partiality of William III. for this tree. There are fine specimens in Bushey Park, some at Sion House from 70 ft. to 80 ft. high, and some reaching 90 ft. at Ken Wood. The honey made from the flowers is, I believe, pale in colour and excellent in quality; whilst, besides the valuable already-mentioned bast, which is manufactured into cordage in Germany, the sugary sap can be fermented into an agreeable wine, and the fine, even-grained wood is highly prized for charcoal, for musical instruments, and for carving. The work of Grinling Gibbons in the choir of St. Paul's, at Windsor, in the library of Trinity College, Cambridge, and at Chatsworth is in this wood. The four rows of large trees, mostly Limes, which give the name Unter den Linden to one of the grandest streets in Berlin, are widely known, but the finest avenue I have myself seen is one in Dromana Park, Co. Waterford, where each tree has been able to grow to the fullest perfection; its stem draped with leafy boughs from the ground to its summit, so even in their development, that the whole tree has that noble cylindrical or columnar outline which is the perfection of its beauty. The modern name Lime is merely a corrupt form of Line. G. S. Boulger.

11, *Burlington Road, Westbourne Park.*

The American Cork or Western Rock Elm (Ulmus racemosus).—This tree is quite widespread from Vermont to Canada and Illinois, but is most abundant in Michigan and Missouri. It is distinguished by the thick, corky ridges which extend along the young branches. The specific gravity of the wood is ·832, while that of the American Elm is only ·649. The wood is fine-grained and compact, and shows but little of that inclination to splinter which renders the wood of the American Elm unfit for many purposes of construction. The wood is susceptible of high polish, and is well fitted for hard finish and interior decoration. In localities where the tree grows wild it is much used in making agricultural implements, &c., but as yet the wood is not found in the eastern markets. In point of heating power, the Rock Elm is but little inferior to Hickory, and very much better than White Oak. It seems a pity that this valuable tree should be rapidly disappearing from the country. Those who contemplate the planting of forests should see that this species is in their list.—Prof. Sargent.

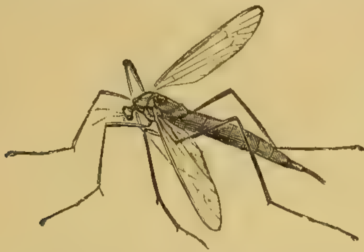
Acer Wagneri laciniatum.—Permit me to direct the attention of planters to this very desirable ornamental Maple, which is, I think, the best of all the cut-leaved varieties. It is a strong vigorous grower, with large, glossy, deeply cut leaves, some of which measure fully 12 in. across, and they are divided into seven lobes, each from 6 in. to 7 in. long. This variety is also ornamental in autumn, its foliage dying off a deep yellow colour.—G. B.

GARDEN DESTROYERS.

TIPULA OLERACEA.

(CRANE FLY, DADDY LONGLEGS, OR JENNY SPINNER.)

The male and female of this insect are very similar in general appearance. The female is, however, rather larger than the male, which is about ¾ in. long and 1½ in. across the wings when fully extended. The female is about ¼ in. longer than the male, and her wings expand nearly ½ in. more. The body of the male is club-shaped at the end, while that of the female is pointed; in other respects, to the ordinary observer, they are alike. The general colour of the insect is a yellowish-brown; the eyes are black, the thorax more or less striped with dark brown; the body is greyish-brown above; the head is small and furnished with a pair of short, slender antennæ; the fore part of the head is produced into a kind of beak. The shape of the head and the attitude of the insect gives it and several allied species, when flying, somewhat the appearance of cranes; hence the name of Crane-flies. The wings are somewhat smoky, the nervures or veins being yellowish-brown. Near the base of each wing, on either side of the thorax, is a short thread-like organ terminated by a knob. The use of these organs, which are called halteres, poisers, or balancers, is uncertain; they are supposed by some to take the place of the lower wings with which most insects are provided (insects, if winged, have usually four, except those belonging to the Natural Order Diptera, or two-winged insects, which includes all true flies); others think that they are in some way connected with the respiratory organs. The legs are very long and slender, the hindmost pair being the longest. The eggs are very small, black, shining grains, of which over 300 have been taken from the body of a female. They are laid by means of a short ovipositor in the ground at the roots of Grass and herbage, where the grubs when hatched can at once procure suitable food. The grubs are commonly known by the name of Leather Jackets, on account of their particularly tough and leathery skins. When full grown they are about 1 in. long, of an earthy-grey colour, with black heads. Like the grubs of all two-winged flies, they have no legs. In August or September they assume the chrysalis state. The chrysalis is about the same size as the grub and of the same colour. The head is furnished with a small horn on either side, and there is a transverse row of small spines on the underside of each joint of the body, by the assistance of which the chrysalis is enabled to work its way to the surface when it is time for the perfect insect to appear.



Daddy Longlegs (Tipula Oleracea).

The Daddy Longlegs may be found from the middle of summer until they are killed by autumnal frosts. In some years they are very abundant, and may be seen on lawns and meadows in immense numbers; in other years hardly one is to be found; they are in no way hurtful to vegetation. The grubs, however, do an enormous amount of damage both in the flower and kitchen gardens. At times lawns suffer much from the grubs eating the roots of the Grass, causing it to wither and die; they also feed on the roots of Dahlias, Carnations, Zinnias, Balsams, China Asters, Potatoes, Beans, Beetroot, Carrots, Turnips, and Lettuces, committing much havoc among them from May till they assume the chrysalis state in August. The best means of reducing the number of these insects appears to be by keeping all garden ground as clean as possible, for it is chiefly in undisturbed, weedy ground that they are bred. When a plant withers and droops, and there is any suspicion that these grubs may be attacking it, a careful search should be made at its roots for them. Wet weather seems to have no injurious effect upon them, as they are fond of damp, moist places. They appear to be able to bear almost any amount of cold, for they have been known to revive after having been frozen until the fluids in their bodies were quite congealed. The chrysalides may often be found when garden ground is being dug, and should always be destroyed. The perfect insects, if in great numbers on a lawn, may be destroyed by passing a roller or mowing machine over them. Rooks, starlings, and other birds destroy great numbers of the grubs. S. G. S.

THE KITCHEN GARDEN.

SOWING AND PLANTING CABBAGES.

I do not think that anything is gained by growing too many varieties of Cabbage. One or two early quick-hearting kinds of the Early York or Little Pixie type, to be planted thickly on a well-sheltered border with a south aspect, come in usefully in February and March, and these may be cleared off in time for early Potatoes or French Beans. For the main crop, on open quarters, such sorts as Early Battersea, Wheeler's Imperial, or Enfield Market, are all good if carefully selected. In sowing select an open piece of ground that has been dug for some time in order to get mellow and consolidated sufficiently to retain moisture without much artificial application of water. The best plan is to make two sowings, one now and another about Aug. 30. Sow thinly in order that every plant may have room to properly develop itself. Keep the soil continually moist and free from weeds. Beds about 5 ft. wide, with an alley on each side, are most convenient, and shallow drills about 4 in. or 6 in. apart offer greater facilities for cleaning with a narrow hoe between the drills than broadcast sowing. The main crop on open quarters I have for years planted after spring-sown Onions, as that crop is harvested early in September and leaves the ground in good condition for any succeeding crop. When the land has been well manured for Onions, good Cabbage could be produced without digging by simply drawing deep drills and soaking them with water, if the ground be at all dry. As, however, the land for Cabbages can scarcely be too rich, I have generally dug into it deeply a heavy dressing of rotten manure, for if the stalks be left to produce a second crop of crowns, the produce will well repay a little extra preparation. The advantage of this second crop over young crops following in quick successional order is not acknowledged by many good cultivators, but from my own experience I must say that a good bed of Cabbages following a crop of Onions, and succeeded by an abundant second crop of Sprouts, is a great gain; and when the stumps are cleared off, the ground, being firm, will be in good condition for Celery trenches. I may remark that while 2½ ft. is not too much space for the rows of the largest Cabbages, 1½ ft. is sufficient for small early kinds. Medium-sized kinds at intermediate distances will prove the most useful for the majority of cultivators. I may remark that any plants showing a tendency to start prematurely to seed should be pulled up and thrown away at once, and replaced by fresh plants from the seed-bed. The remnant of the plants left on the seed-bed should be pulled up and pricked out into nursery beds, to stand the winter for filling up gaps and for making a small successional planting in March for succession during the summer, by which time spring-sown crops will be ready for use. J. Groom.

VEGETABLES IN TRENCHES.

This season has illustrated in a remarkable manner the variable character of our climate, and from the beginning of June the constantly saturated state of the soil through heavy rains, accompanied by a low temperature, brought tender vegetation to a standstill, especially on heavy, retentive soils. But a sudden change to brilliant skies and drying winds has already given the vegetable quarters on light soils a dried-up aspect, and with a continuance of the present weather choice vegetables will soon be suffering from want of water. The Potato crop, which at one time showed here and there unmistakeable signs of disease, is now ripe and ready for lifting, with the exception of the latest varieties, and the disease, through the drier weather, is apparently arrested in its course. We are so accustomed to moist summers, that many believe artificial watering or irrigation to be useless, and doubtless if sufficient water be only given to moisten the surface, thereby drawing the rootlets up where they will be most likely to be scorched, such may be the case. But we have abundant evidence that even the raised up flower-beds, now-a-days so fashionable, may be kept as luxuriant as possible, no matter how hot and dry the weather may be, if water be liberally given to them. In the kitchen garden, where a supply of succulent vegetables is in constant request, many of the crops for midsummer and autumn use may be grown in trenches similar to those used for Celery, but not quite so deep. In fact, depth is a mistake to be avoided, as if too much of the top spit be taken out the crops will be in some cases brought in contact with a sour, hard subsoil. Where these conditions exist, the bottom spit should be thrown out and replaced by the top one, mixing with it a good dressing of well decayed manure. There is one advantage belonging to this system of culture, viz., a saving of labour. In the case of land that has been cleared of any of the Cabbage family, or of any crop that leaves the ground very hard, it would be simply hoed and raked level, and the trenches marked out at the required distance apart. When ready for the seed or plants, they need not be more than 3 in. or 4 in. below the ordinary level, as the soil thrown out will keep the drought from acting on the intervening spaces, and a mulching of partly-decayed manure should be applied over the roots as soon as the crop is in active growth. This will prevent evaporation, and one good soaking of water will keep any crop in a growing condition for several days, no matter how hot or dry the weather may be. All kinds of tall Marrow Peas will continue in bearing for a long period if treated in this manner and kept closely gathered as soon as the Peas are fit for table; the same remark also applies to Scarlet Runners that drop their blossoms instead of setting them when dry at the root; likewise to French and dwarf Beans, and we may also add Cauliflowers of all kinds, that in hot, dry seasons invariably button or form heads prematurely. Of small-growing crops that require little room two or three rows may be planted in wide trenches, such as Turnips, Radishes, Lettuce, and Spinach, for in addition to the advantage of keeping the moisture confined to the roots, the full glare of the sun does less harm than in the case of crops on level ground. A few light evergreen branches laid across the trenches act as a good screen for fresh-planted or newly-sown crops. These are all simple and inexpensive remedies, which, if droughts were of annual occurrence, would be much more generally appreciated than they are at present.

J. Groom.

Culture of Asparagus at Chester.—Having seen some remarkably fine Asparagus grown near Chester by Mr. Viggars, we asked him for a few words as to the mode of culture which he pursues, and which is as follows:—"First year: Sow the seed on well-manured ground about 12 in. apart in drills, and let the seedlings grow for two years. Third year: Prepare some good sandy ground for the best plants; manure 25 to 30 tons to the acre; form out beds 4 ft. wide, and plant three rows in each bed. Fourth year: Manure and salt in winter, and in the spring soil the beds up a little, say about 3 in. or so. Fifth year: Cut till the end of May. Sixth year: Manure and salt every other year, and cut till the end of June. We have about 6 acres of Asparagus of different ages. I took some thirty-year-old plants up last year, about 2 acres, and sold them for forcing; they were very good—quite equal to some plants nine or ten years old. I have had a portion of Asparagus ground set apart for sewage irrigation; if I find that answer, I intend putting the sewage over the whole of the ground, as I have pipes laid all along it."

Hathaway's Excelsior Tomato.—Having grown several varieties of Tomatoes this season in pots, viz., Criterion, Old Red, Excelsior (Hathaway's), Orangefield, Trophy, Green Gage, and Kay's Prolific, I consider Hathaway's Excelsior far superior to any of them for general purposes, being a good grower and cropper, and having a handsome fruit, very large and as round as an Apple. Out-of-doors, too, it promises to be a desirable kind, as it ripens early, an important point in connection with Tomatoes in the open air.—J. Williams, *Dunorlan, Tunbridge Wells.*

THE FRUIT GARDEN.

DANGERS IN THE USE OF TINNED FRUITS.

Pine-apples, Peaches, Apricots, and other fruits preserved in tins and imported from America constitute at the present time a considerable supply of food in this country. The advantage accruing from delicate fruits being obtainable at all seasons of the year at a moderate price needs no comment. I feel it my duty, however, to direct attention to the fact that the benefit anticipated is of a doubtful character, since the juices of the fruit are, under certain conditions, able to dissolve portions of the tin from the tin-plate in sufficient quantities to cause sickness. The following facts are of sufficient importance, both to the medical profession and to the general public, to warrant their being made known. Having lately had occasion to examine some liquid vomited during sudden sickness, with the view of detecting a poison of an unknown nature, either organic or metallic, I submitted it to a very complete chemical analysis. The absence of any poisonous alkaloid was proved by the process of Stas. Arsenic, antimony, and mercury were proved to be absent as well by Reinsch's process as by subsequent operations. A small quantity of a brown metallic sulphide was obtained, soluble in sulphide of ammonium, and reprecipitable from this solution by acids. The actual amount of precipitate was inconsiderable, only sufficient, in fact, to cover a very small filter. It was impossible to attempt any quantitative estimation of this substance, but it was decided to put its identity beyond doubt. This was done by reducing the sulphide to the metallic state by means of the blow-pipe. The minute globules of metal, which could not have weighed more than a few thousandths of a grain, possessed the colour, hardness, malleability, and other properties of metallic tin. The minute quantity found was that only which had escaped absorption by the system, and in all probability much less than the whole amount taken. Having no further information concerning the case, I cannot say decidedly what was the source of this metal, but I was previously aware that it is occasionally present in the juice of fruit preserved in tins—as, for instance, Peaches. My friend, Dr. C. R. A. Wright, Lecturer on Chemistry at St. Mary's Hospital, informed me that he had detected it in the remains of a can of fruit, to the eating of which in a tart an attack of sickness was attributed. One of the students in the chemical laboratory of King's College—Mr. A. E. Menke—has lately been estimating, under my direction, the amount of metal present in two or three samples of tinned provisions. In the syrup from a tin of Pine-apple, of about a pint in capacity, there was found a grain of tin (0·15 grm.); in a large tin of Apples, a little less than 4-100ths of a grain; and in the liquor from a tin of lobster, mere traces of the metal were found. (See "Chemical News," July 6). No information of importance concerning tin poisoning has been recorded, hence it is difficult to say what quantity of the substance may be looked upon as dangerous. It will be advisable in future to throw away the syrup contained in fruit tins, and indeed the whole contents of every such vessel the surface of which is at all corroded. Regarding the cause of the occasional solution of the tin, a careful examination has shown that at the point where the drop of solder seals the aperture made for the escape of steam during the preserving process a galvanic action is set up between the lead of the solder and the tin of the tin plate. A possible remedy exists in sealing the can with a drop of pure tin.—W. N. Hartley, F. Inst. Chem., F.R.S.E., in "Lancet."

Market Pears.—In the London market gardens there is a fair crop of Pears on standard trees and on those on walls of some kinds, whilst others are almost a failure. It is satisfactory to find, however, that that excellent Pear, a coloured plate of which was given in The Garden (see Vol. XII., p. 234), named the Pitmaston, is bearing a fair crop where grafted on the Pear stock, *i.e.*, old Pear trees cut back and grafted on the Quince. On walls or espaliers this Pear does well, but as a standard, owing to the great size and weight of its fruit, it is unsuitable.—S.

Madresfield Court Grape.—The true value of this excellent Grape is only even now beginning to be understood. It has been for some weeks past the best Black Grape in Covent Garden Market, and its fine appearance obtains for it higher prices than those paid for any other kind. Its great fault with most growers is that its berries crack after stoning, a circumstance which completely destroys its appearance and quality. One of the most successful growers of it, however, and one who has at the present time a large house of ripe fruit of it, in which a cracked berry cannot be found, informed me that the way in which he succeeds so well with it is by withholding water from the roots until some time after the berries have stoned, when a good soaking was given. As long as they felt hard and solid no water was administered.—S.

THE LIBRARY.

PINE PLANTATIONS IN FRANCE.*

Ninety years ago the Landes of Gascony alone formed an area of 300 square miles of barren, ever-shifting sand, the dread of the inhabitants, which in times of storms actually covered cultivated fields, villages, and even entire forests. Since then these and the extensive Landes of the Gironde have been largely and profitably reclaimed by the planting thereon of Pinus maritima. Numerous books have been written by Frenchmen and others detailing the means employed in fixing and utilising these shifting sands, and it is by a judicious selection from the best of these that our author has compiled this little volume. Pinus maritima is a native of both coasts, and also of a few of the islands of the Mediterranean, growing luxuriantly in the poorest of sandy soils; hence the success that attends its cultivation on the sand dunes of the French coast bordering on the Mediterranean. For the mode of sowing the seed of this Pine and the after means employed to protect the seedlings from the shifting sands; for the cultural details of this Pine as a forest tree, and its comparative value as a Coniferous timber tree, as well as for its commercial products, such as yellow resin, pitch, turpentine, &c., and their uses, those interested ought by all means to consult this volume. There is also a chapter on the diseases and enemies (animal and vegetable) to which this tree is subject in France, and another most interesting chapter is devoted to a consideration of the comparative merits of the various geographical varieties of the Pinus sylvestris, which we commend to the consideration of those who are interested in the cultivation of that species. "This volume," we are informed in the preface, "was originally compiled in view of what seemed to be required at the Cape of Good Hope. It has been revised and printed now only as a contribution towards a renewed enterprise, to arrest and utilise sand wastes which stretch from Table Mountain to the Hottentot Holland Mountains." There are similar sand wastes in this country, particularly those on the Lincolnshire coast; and as the very poorest of us have an interest in the reclamation of waste land in Britain, we gladly contribute to that end by commending this volume to all whom it may concern. Geo. Syme.

THE STUDENT'S FLORA OF THE BRITISH ISLES.†

It is seven years since the first edition of this very useful handbook was published, and a second edition has now, somewhat tardily, appeared, the previous one having been out of print for a considerable time. Too much praise cannot be bestowed on the general design of the book; the faults, as a rule, are mainly in points of detail, and do not seriously detract from the value of the work. As a matter of fact, the information given could not possibly have been collated had not the enormous botanical library and immense herbarium (the largest and most complete in the world) of the Royal Gardens been at the complete command of the author. We may enumerate a few of the particularly good points of the work in hand. The essential characters and properties of the Natural Orders and genera are given, their distribution, the number of genera in each Natural Order, and the number of species in each genus. The student can thus with ease form a tolerably correct estimate of the proportions which the indigenous members of any Natural Order or genus bears to its relatives in the rest of the world. The geographical distribution in a wild state of each species is fully given, and when a plant has become naturalised to any extent in a foreign country the fact is mentioned. For careful and correct diagnoses, however, the critical British botanist will find works which, from his standpoint, are much superior to "The Student's Flora of the British Isles," although none can compare with it in the vast mass of information which it contains. Some of the more obvious mistakes of the first edition have been corrected in the present one, but many still remain, and these we hope to see rectified in future editions. After his expression of dissatisfaction with the arrangement of the aquatic Ranunculi, and his regret that he had not in that group secured the co-operation of Mr. Baker (in the preface to the first edition), we fully expected that the author would have made some alteration in the revised edition. None, however, has been made, if we except the addition of a variety, R. fissifolius, under sub-species heterophyllus. The arrangement of the Cryptogams has been totally altered; the genera Selaginella and Isoetes have been taken from Lycopodiaceæ and a separate Order created for them, viz., Selaginellaceæ, as it is given in the body of the work, or Selaginaceæ, as it appears in the synopsis at the commencement. Then, again, the whole of the Cryptogams have been divided into two natural groups—those with spores of one kind only and those with spores of two kinds. The Ferns, Horsetails, and Club Mosses come under the first group, the Selaginaceæ and Marsilaceæ under the second. The Roses have been somewhat re-arranged; in the first edition but five species are given, with numerous sub-species and varieties; whereas now the British forms are grouped round seven species. These are the principal modifications of importance. We may add that Cicendia filiformis has been dignified with generic rank, and now goes under the name of Microcala filiformis. The distribution of some of the more critical species and varieties throughout the British Isles leaves much to be desired; and much thoroughly authenticated information upon this point might have been obtained, had the recent volumes of the "Journal of Botany" and other works been consulted. There are many typographical errors, too, which seem to indicate that sufficient care has not been spent on the work as it passed through the press. What, for instance, could be made of the following were it detached from the letter-press accompanying it?—*This species differs from U. (Utricularia) Minor and its more robust habit and orbicular life.* The initial letter of *minor* should not have been a capital, *and* should have been *in*, and the final word of the quotation *leaf*, not *life*. In several instances the essential characters of the Natural Orders are not comprehensive enough, *e.g.*, Scrophulariaceæ, where the calyx is represented as having five divisions, whereas in Veronica the number of sepals is nearly always four.

SKETCHES FOR COTTAGES.*

Mr. Lascelles sends us a copy of this book of designs for constructions in the patent cement slab system to which he has paid so much attention. It would have added to the value of the designs if some idea of the price at any given time or place had been added. The designs, it need hardly be said, are interesting and good—we like those best which are not stingy of light, and have not the very long, bare roofs. It is odd how little light architects will allow us in this dull climate, and curious to notice how light is generally more limited near the top of the house, making it thereby heavy where it ought to be the reverse. These cottage designs cannot fail to interest those concerned in the improvement of the dwellings on their estates. They begin with a very simple type of cottage—the "But and Ben" of the Scotch.

We believe the material employed by Mr. Lascelles in such structures is well adapted for the construction of improved garden walls. The old wall is too expensive and needlessly heavy; and we trust Mr. Lascelles will turn his attention to the subject. A good system carried out by one of such proved skill and enlightened enterprise in the building art could scarcely fail to be very successful. Dr. Johnson said he never ate as much wall fruit as he should like: the remedy is still wanted—more walls for the choicer fruits that will not ripen without their aid, and close covering of every square foot of available wall with the best varieties.

M. E. Andre.—We have received a very interesting report of this gentleman's scientific mission to South America—so fruitful in discoveries of valuable plants; it is in French, and is extracted from the "Archives des Missions Scientifiques et Littéraires." We hope to illustrate some of M. André's most remarkable plant discoveries in The Garden as soon as good specimens are procurable.

The Pentstemon as a Bee Plant.—We have at present a bed of Pentstemons, 70 ft. by 18 ft., in full bloom, and the number of bees that is among them from morning to night is something wonderful. Oddly enough, there is a bed of Antirrhinums still larger not far off, and not a single bee is to be seen amongst them, although they are also in full flower. I have some very fine seedling Pentstemons I obtained some years ago by introducing a strong-growing variety amongst our plants of them; they seem to have crossed freely with it, and it has been the means of nearly doubling the length of the flower-spikes.—J. Downie, *Pinkhill Nursery, Corstorphine.*

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* "Pine Plantations in France." Compiled by John Croumbie Brown, LL.D., &c. Edinburgh: Oliver & Boyd. London: Simpkin, Marshall, & Co.

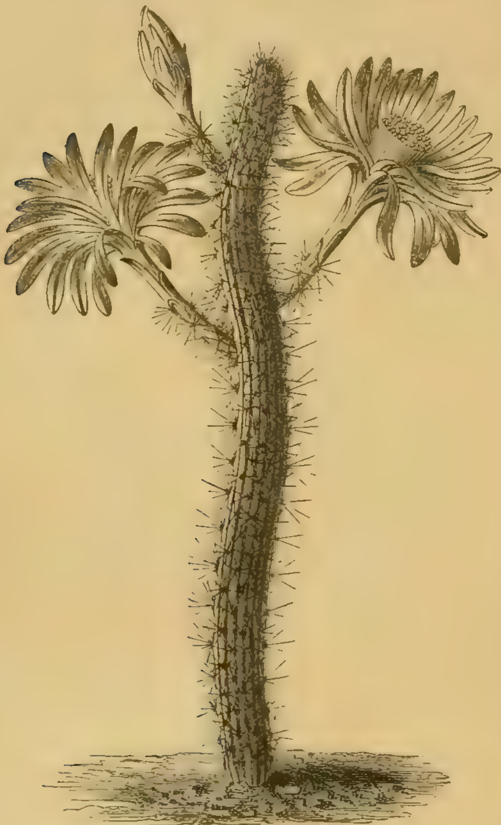
† "The Student's Flora of the British Isles." Second Edition. By Sir J. D. Hooker. London: Macmillan & Co.

* "Sketches for Cottages." By Norman Shaw, R.A. W. H. Lascelles, 121, Bunhill Row, E.C.

THE INDOOR GARDEN.

CEREUS SERPENTINUS.

This is an erect-growing plant until it attains a height of about 3 ft., when it remembers, as it were, its name, and begins to twist. Its spines are what is termed setose, of a silvery white colour, and densely set on the stem, which never gets more than 1 in. in diameter. Its flowers, which are white, with a slight tint of brown, are about 9 in. in length; they open in the evening and close the next day. The Night-flowering Cereus is generally considered to be exceptional as to its time of flowering, but it is in reality not so; the only difference is that some last longer than others; but most of them go off when the sun begins to shine strongly. It is quite a greenhouse plant, and one by no means difficult to cultivate. J. Croucher.



Cereus serpentinus.

Sudbury House, Hammersmith.

Storing Gesneraceous Roots in Winter.—We were agreeably impressed last spring with the completeness of the arrangements made for storing tubers of Gloxinias and other Gesneraceous plants in the horticultural establishment of M. Louis Van Houtte, of Ghent. A long room, provided with several tiers of stages, was completely filled with tubers of all sorts and sizes in the most perfect state of preservation, and in numbers so astounding that we forbear to quote how many are in this way stored annually. With us too often the returning spring finds the tubers either rotted, or parched up, or etherealised—gone! This often results from keeping them in too high a temperature—from 70° to 80°, which is much too hot. The secret of M. Van Houtte's success in their preservation is that they are not subjected to extremes of any kind; they are dug up and turned out with their roots and leaves attached and such of the soil as will hang about them, and they are allowed to dry very slowly surrounded by these *impedimenta*. During winter the bulb store is kept at about 50° Fahr. The result is that the roots turn out plump and fresh when required for planting.—"Florist." [Such roots have often been lost through being stored in rooms not protected from excessive cold.]

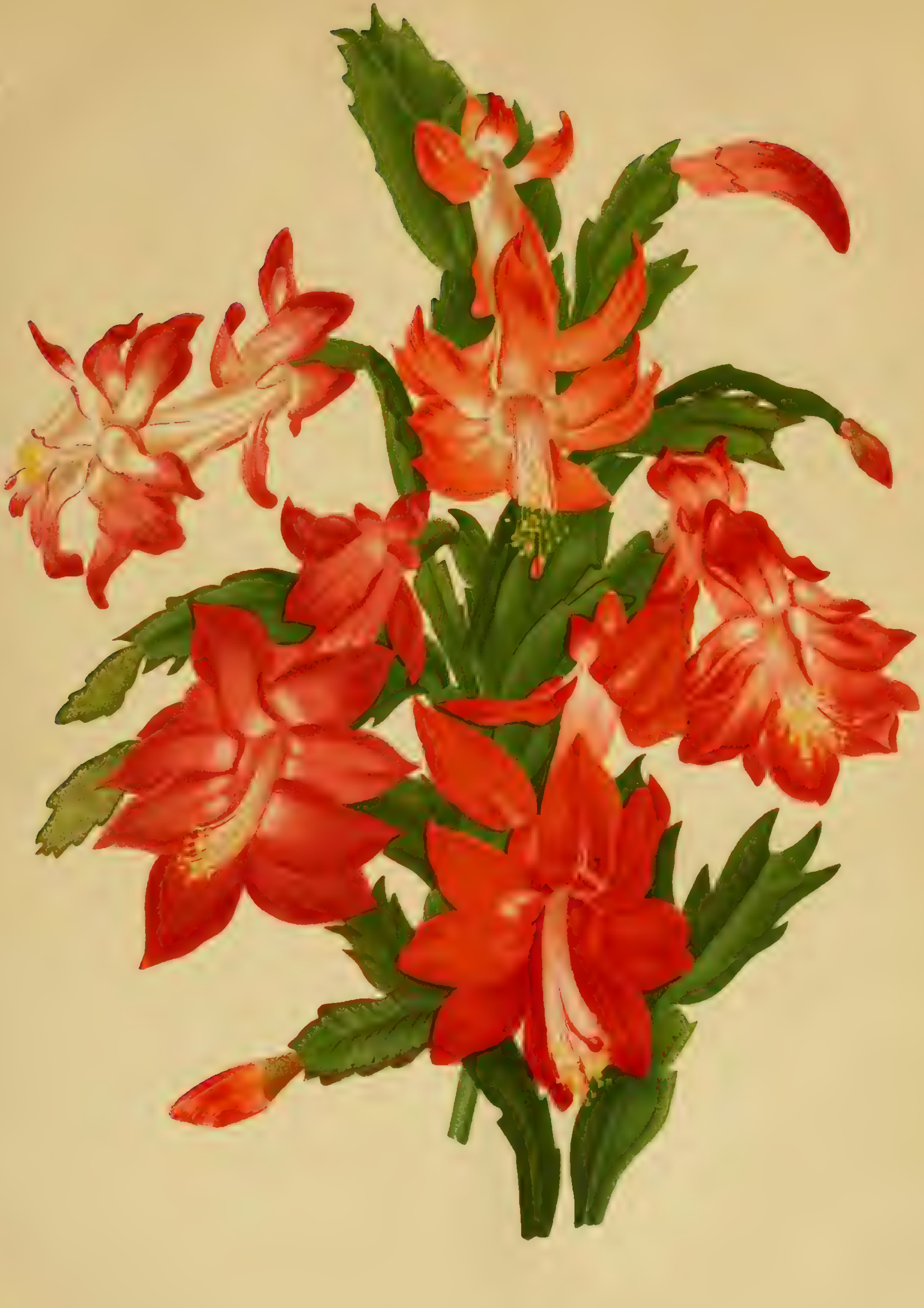
PLATE CXL.

VARIETIES OF EPIPHYLLUM TRUNCATUM.

As decorative plants during winter and spring the different varieties belonging to this section of Cacti have few equals. They bloom well even in a very small state, and they can consequently be used either as plants in 5-in. or 6-in. pots to decorate the side benches in a small stove or intermediate house, or they can be grown to a size sufficiently large to fit them for the central position in large plant structures. In no way, however, are they seen to better advantage than when grown on their own roots in the form of low spreading bushes 12 in. or 15 in. in diameter. The pots should be plunged in a neat wire basket, of suitable size, fringed with Lycopodium cæsium or others, and suspended from the roof of the house in which they are placed. In this way their drooping flowers are seen to the best advantage. Showy flowering plants with a drooping habit are not over plentiful, and it is well to use such as these Epiphyllums in that way, for if hanging baskets were employed to a greater extent than they usually are in plant houses, both warm and cool, the appearance of the houses would be enhanced. Epiphyllums of this class are easily propagated either by grafting them on the Pereskia stock or by striking cuttings of them for growing on their own roots. Cuttings made from pieces of the shoots consisting of three, four, or half-a-dozen joints taken off before growth has commenced, and inserted singly in small pots drained and filled with a mixture of equal parts of sand and peat or sand and loam, will strike root freely if placed in a brisk heat and slightly but not over moistened. They should be kept moderately near the light, but not enclosed under a propagating glass or similar contrivance, as they are liable to rot if confined. When the pots are filled with roots give a shift into others a size or two larger, but they must never be over-potted. A mixture of five parts turfy loam to one of sand, with a sprinkling of potsherds, will be found to suit them perfectly. Soil of an adhesive character, that will hold too much moisture, they cannot bear. Grow them on in an ordinary stove temperature without shade during the summer, and pinch the points out of any shoots that take too much lead. A temperature of 50° through the winter will be sufficient for them, and they should be kept drier at the root than when in active growth. In spring increase the pot room according to the progress which the roots have made, and grow them on as in the preceding season until the end of July; then turn them out for a month under a south wall, where they will be exposed to the full influence of the sun. In cold parts of the country, where this cannot be done, instead of turning them out of doors, they should occupy a dry shelf in a greenhouse or an equally airy light position in a pit or frame, and they should have less water given to the roots than whilst they are growing. Epiphyllums of the truncatum class, being originally from Brazil, will consequently bear a high temperature, and their progress, other details in their cultivation being equal, will usually be more or less in keeping with the amount of heat to which they are subjected. They are generally grown as standards, so as to form either a drooping pyramidal head, or as plants of a spreading, umbrella shape. Their cultural requirements when on the Pereskia stock are similar to those under which they succeed on their roots; but on this stock they will frequently bear more indifferent treatment than on their own roots. The Pereskia stocks on which to grow them are easily struck from cuttings put in in the spring and subsequently treated in a similar way to the generality of the Cactus family, with the exception that they do not like such a continuous dry condition of the roots as some of the most succulent species will bear. The following are good varieties, viz., E. violaceum Snowi, E. v. superbum, E. v. grandiflorum, E. splendens, E. salmoneum, E. s. marginatum, E. albo-violaceum, E. Bridgesi, E. bicolor, and E. Ruckeri. T. Baines.

[The specimens from which our plate was prepared were grown by Messrs. Veitch & Sons, of Chelsea.]

Some Lilies now in bloom are far too strongly scented to be kept in rooms.—S.

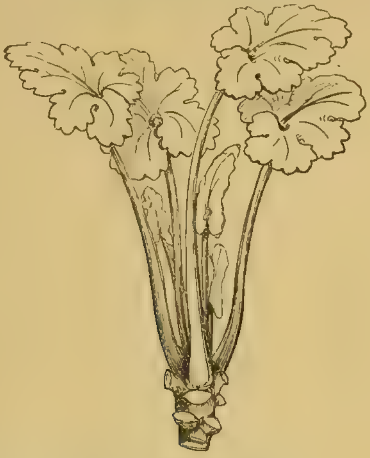


A GROUP OF EPIPHYLLUMS (VARIETIES)

PROPAGATING.

Double Primulas.—The best months in which to increase these are May, June, and July. Plants intended for propagation must be got into the house and kept syringed two or three times a day and shaded from hot sunshine; cut away all bad leaves and give a liberal supply of water at the root. In about a fortnight they will supply cuttings, which are best put in singly in 2½-in. pots in finely-sifted soil consisting of yellow loam, leaf-soil, and silver sand; prepare the cuttings as shown in the annexed illustration, after which press them gently into the soil and water with a fine-rosed pot, but not over the leaves; plunge the pots half way up in the propagating box on a brisk bottom-heat, put on the glasses or lights and shade from all sunshine, open the box every morning early for an hour or two and sprinkle overhead with water gently according to the weather. They must not on any account be allowed to flag. In three weeks they will be ready to take out, when they must be carefully and gradually hardened off. The temperature necessary to bring forward the cuttings should be from 65° to 70°.

H. H.



Cutting of Double Primula.

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—When hot dry weather sets in green fly is almost certain to attack the plants, and it spreads at a rapid rate if not destroyed or checked. Fumigating with Tobacco smoke is the only remedy which I have found to destroy it; but it is very dangerous to do this when the plants are in full growth; even if very great care be exercised, the young and tender leaves, that it is most desirable should be preserved, suffer. Mr. Meiklejohn, of Stirling, who grows Auriculas most successfully, destroys green fly by using a powder made of dried Tobacco. He dries the Tobacco until he can rub it into a powder with his hands; a small pinch of this dropped in the centre of a plant infested with fly will destroy that pest. I find that Scotch snuff in a dry state, or Pooley's Tobacco Powder answers the same purpose. Perhaps the better plan is to remove the fly with a small camel's-hair brush; but in a large collection this is a tedious process. I have just finished re-potting; it is much later than usual for this operation, but the crowns are very strong and the plants will soon become established. The offsets put in early in spring (February) have also been re-potted into 3-in. pots. Many of these are now strong plants; they will produce trusses with from three to six pips next year, and many of them are much better than those on the older plants. Robert Trail, Colonel Champneys, Pizarro, Lord Lorne, John Waterston, Mrs. Smith, and, indeed, many other sorts are most satisfactory from small plants. It is a good time now to remove offsets. Very scarce sorts should be placed under a bell-glass; they are certain to root in such a place if they be not overwatered. I put the ordinary stock under hand-lights, where they will nearly all form roots. Those most difficult to manage are those formed on the stem above the surface of the ground, but there will be no difficulty if a bell-glass be used.

Carnations and Picotees.—The blooming season for these is now nearly over; still, there are large numbers of side shoots which will yield us a few blooms for cutting a week or ten days longer. As soon as they fade we remove the plants out-of-doors. Perhaps half of our plants are already in the open air, and before this appears in print all that portion of our stock will be layered. It is necessary to do this at once in order to check the growth of the "grass," which, in the case of many of the plants, will run to flower. The check which the growth receives by cutting it nearly through arrests the flow of sap, and in nearly every case prevents spindling. Before layering, the surface soil in the pots should be removed and be replaced with some light material consisting of about equal parts of loam, leaf-mould, and sand.

Pinks.—The pipings which were put in six weeks ago are now well rooted, and the boxes containing them have been placed out-of-doors. If this be not done the plants get very much drawn. They must now be planted out about 4 in. apart in fine soil, to be re-planted again in October. If there be not a sufficient number of plants, it is not difficult to obtain plenty of good side growths from the strong shoots. Such plants will not be large, but they will produce a few good, full-sized, well-marked flowers. If the space is now vacant where it is intended to put out the plants, it ought to be trenched up and some good rotten manure be mixed with it. It is not often that this can be done, but, when possible, the plants will succeed all the better.

Gladioli.—The spikes of these are now showing themselves and require attention. Stoutish sticks must be put into the ground near the bulbs, but not so close as to injure them, and to these the spikes must be fastened. If it is intended to hybridise any of the flowers with the view of saving seed, those that open earliest should be selected, as many of those that bloom late will not produce seed, owing to cold wet weather setting in before it has had time to ripen. The very best varieties only should be selected, both as seed bearers and also to take the pollen from. There is no flower easier to hybridise than the Gladiolus. Before the flower is quite open the anthers should be removed, and next day take the pollen from the selected variety and dust it on the stigma of the flowers from which the pollen has been removed. I do not trust to one application, but make a third, and even a fourth. The beds are mulched and water is applied when necessary. I only use clear water, but many use guano water or drainings from the manure heap. I fancy manure water aids decay in many of the bulbs, and as the strongest spikes can be produced without its aid it is better not to use it.

Dahlias.—These are now growing with great vigour, and will require considerable attention. Nearly all the varieties produce too many shoots; all should be removed but three or four, and the flower-buds must also be thinned out. This is a matter requiring some experience, inasmuch as some varieties have a tendency to coarseness, and this will be encouraged, not checked, by thinning out the flowers too much. Flowers possessing refinement in a high degree and that are usually undersized cannot, on the other hand, be overthinned. See that traps are set for earwigs, which are very destructive to the blooms; they eat the edges of the yet unopened petals. Bean-stalks, inserted between the shoots and the sticks to which the plants are tied, form a good hiding-place for the insects; they crawl into them at night and can be blown out in the morning into a pail of water.

Hollyhocks.—These require much the same attention as Dahlias, such as fastening the main growth to the sticks and removing the side shoots. If eyes can be obtained from these, they make excellent plants. I simply take the eye and cut it out with about ½ in. of stem attached; these are inserted about four or five together in a small pot, using fine soil with a little leaf-mould and sand added to it. See that the stems are fastened to their supports as they progress in growth, else they are likely to snap over during a gale. Mulch round the roots of these as well as Dahlias; both are gross feeders and will take liberal drenchings of manure water. In the case of the Dahlia, the variety must be again taken into account, as manure water has a tendency to produce coarseness in some sorts.—J. Douglas.

Autumn Roses.—Independently of the disposition which particular groups of Roses, such as the Bourbons and Noisettes, and some of the so-called Hybrid Perpetuals, have to flower through the autumn months, a good deal depends upon the way they are treated. During the scorching weather that has been experienced in most parts of the kingdom, with, in many places, up to the present time, very little rain for six or seven weeks, the ground has necessarily got very dry, and as the autumn flowering is dependent upon the growth the plants now make, unless they are copiously watered, little bloom may be looked for. Mere sprinklings are useless; one thorough soaking, whereby enough is given to penetrate to a depth of 8 in. or 10 in., is immeasurably preferable to frequent driblets, which only serve to excite the fibres immediately near the surface into growth, yet do nothing to stimulate the main roots that lie deeper. Where the ground has been mulched, as advised early in the season, with rotten manure, the surface will not have become so hard and impervious as to prevent the water penetrating freely. If this has not been attended to, and where, with a view to keep up a trim appearance, the ground has been raked, it will, in many cases, be smooth and hard, necessitating loosening before watering. This may be done with the hoe, or where it has got into a very hard state through treading in gathering the flowers, 1 in. or 2 in. of the top will be easiest broken up with the fork. Care must be taken not to thrust the fork in so as to injure the roots, or more harm than good will result. Anything in the shape of liquid manure will be better than simple water.

Roses on Walls.—I have repeatedly urged the necessity for paying more attention to Roses on walls than they usually receive. From their position, very little rain reaches their tops, and the roots, much oftener than otherwise, are either confined in narrow, insufficient borders or force their way into the ungenial materials of which the walk is formed. In the latter case nothing can be done in the shape of supplying food to the roots, except liberal soakings of water containing some fertilising elements, such as guano. As a matter of course, in these places whatever is used must be in a clear, transparent state, for if at all thick or muddy it will give a dirty appearance to the walk; but by using such as suggested the roots in these positions can be moistened and receive the nutrition they require without staining or disfiguring the walks Frequent and copious applications of clean water with the garden engine or syringe, so as to free the foliage from the accumulation of dust and from red spider, which so frequently attacks wall Roses, will also materially assist the formation of young flowering wood. In the case of the latest blooming kinds, like the old blush and crimson Chinese varieties, which in many localities will often continue to produce flowers up to December, the attention advised is a positive necessity.

Mildew on Roses.—In most places comparatively little mildew has yet been seen, owing to the copious rainfall we had in the spring. This parasite generally attacks Roses, like other cultivated plants, when growth becomes stagnated through insufficient root moisture, and is always proportionately aggravated where the Roses are too much confined by trees and shrubs or buildings. Where, as in most private gardens, the quantity grown is limited, it is worth while to syringe the affected plants with a weak solution of Gishurst, or with water impregnated with sulphur, which will generally be found much more certain in its effects than dusting them with sulphur, which is so apt to get blown off with the wind or washed away by showers before it has effected its object. To those who grow Roses, and who, after the spring operations of pruning, tying, nailing, &c., leave them comparatively little cared for, such attention as here advised may appear to entail unnecessary trouble, but with Roses, as with other plants, the result will always be proportionate to the attention bestowed, and the flowers that may be had by this necessary care will be doubly acceptable when the season's comparative plenty is past.

Selection of Autumn-blooming Roses, as also for Flowering Earlier in the Season.—There is no better way to arrive at satisfactory results than to note particularly the different kinds that succeed best in any given locality, for it must be borne in mind that the soils and situations are comparatively few wherein Roses can, even with the greatest skill and attention, be grown in anything like the condition they are produced by the leading Rose growers; in fact, there is nothing more deceptive than the magnificent blooms shown, many of them of delicate kinds that will only succeed under the most exceptional conditions of soil and climate; consequently, in forming a conclusion as to what it is best to plant, it is much better to see the kinds growing, especially noting such as succeed in the immediate neighbourhood where additional varieties are desired. Under no consideration should I advise ordinary Rose cultivators to plant any that are shy growers or delicate in constitution. This particularly holds good with the Hybrid Perpetual varieties grown for general display. It is also applicable in the case of the late summer and autumn-flowering kinds. Where high walls, tall pillars, the trunk of a dead tree, or anything of a similar nature is to be covered, suitable kinds should be selected, choosing only such as are the most vigorous and will grow to a considerable height in a short space of time. In such positions varieties that naturally produce their flowers in large trusses, such as Aimée Vibert, Lamarque, and climbing Devoniensis, Gloire de Dijon, Mdlle. Marie Berton, Belle Lyonnaise, and Fellenberg, may be suitable. Those intending to plant, for whatever purpose, when not familiar with Roses generally, will do well to note during the flowering season those sorts that will suit their respective purposes, by which means they will be in a position to satisfy themselves better than by relying upon descriptions given in catalogues.

Propagating.—Budding should be continued without intermission until the whole to be done are finished, and cutting and striking followed up. It is much better to have more than are required than to be deficient, as Roses may with the best advantage be largely introduced into shrubberies, mixed borders, on iron archways, over walks, on divisional screens supported by wood or ironwork, for hedges to hide the less dressed portion of the ground. In few private establishments are the plants for such purposes forthcoming in sufficient quantities, unless where propagation by cuttings is largely carried out.—T. Baines.

Bedding Plants.—Ordinary bedding plants, such as Pelargoniums, Verbenas, Calceolarias, Heliotropes, and similar subjects, may now be regarded as at their best; this is, therefore, a good time for considering what plan of bedding shall be adopted next year, as well as for noting the improvements and rectifications that may be necessary in order to set off the ground or beds to the best advantage. In dry weather, plants in active growth will require abundance of water, as well as occasional applications of weak liquid manure; strong-growing plants will require stakes, but as few as possible should be employed. Where Petunias, Verbenas, and similar plants are used as edgings, they should be kept pegged neatly down. Now that the plants in the carpet beds will be growing freely, both knife and shears must be used freely, so as to preserve exactitude in the pattern, for confusion, as regards design, in this mode of gardening is anything but imposing. Decaying flowers should be removed, seed-pods picked off, and unhealthy or exhausted plants replaced by fresh and vigorous ones from the reserve garden.

Let every effort be used to render the flower garden as interesting and attractive as possible. Zonal Pelargoniums, when fairly established, will continue healthy and will flower well with a somewhat restricted supply of moisture; the tricolor sorts, which are generally grown for the beauty of their foliage only, should be divested of their blooms before they expand, and should be encouraged by every possible means to grow freely. Continue to thin, stake, and tie up the shoots of Dahlias and tall-growing herbaceous plants wherever this is required; also remove decayed leaves and flower-stems as soon as the flowering period is over; and it is very likely that many species of Larkspur and other hardy plants will, this season, flower freely for the second time in the course of the autumn. Many annual flowers have been of short duration this year; they should, however, be cleared off as soon as they are out of bloom, unless seed is required, and this should never be saved promiscuously, or the strain will gradually deteriorate, as it generally happens that the worst flowers are the most productive of seed. If new and distinct varieties are desired recourse must be had to artificial fertilisation; but if improvement of strain is merely what is sought for, that can, with more or less certainty, be secured by judicious selection, a practice which should be invariably pursued with annual flowers generally, and more particularly with such plants as the various sorts of Stocks and Wallflowers, Mignonette, Anemones, Columbines, Antirrhinums, Pinks, Larkspurs, Helichrysums, Phlox Drummondi, &c., as, by this means, annual flowers, as well as culinary vegetables of various kinds, may be brought to a very high degree of excellence. The marking of the selected blooms may be effected by attaching to them small pieces of coloured worsted or some such material; and the seed produced by the marked blooms should be carefully collected as soon as fairly ripe. Where the production of hybrids or cross-bred plants is attempted, fecundation must be induced artificially, an operation which requires considerable care, and, as indispensable to success, it is necessary that the blooms selected to bear seed should be emasculated at an early period of their existence, that is, the anthers should be carefully removed, and in the case of some species it is necessary to do this even before the blooms have expanded, in order to prevent the possibility of self-fertilisation; in the case of some small-flowering species, however, there is some difficulty in effecting this, although it is easy enough to accomplish it in the case of such plants as the Petunia, &c., by merely slitting a small portion of the tube of the corolla and removing the unripened anthers, taking care at the same time to avoid injuring the stigma, which should be afterwards carefully watched; its slightly glutinous condition will indicate its readiness for the application of foreign pollen, which should be carefully applied with a camel's-hair pencil or otherwise.

Pansies and Violas.—Cuttings of these should now be put in. They strike freely in the open air under a north wall, but must be well supplied with water. The Violas especially deserve a place in every garden; the profusion of flowers they bear and their continuous blooming habit place them in the front rank of hardy decorative plants. Pansies, particularly the self-coloured varieties, are very beautiful during spring, but do not flower as long as the Violas; yet if a succession of plants be kept on hand, by putting in a few cuttings every six weeks through the season, from the time growth commences in spring until autumn, uninterrupted bloom may be had; but in the hot summer months they should be grown on the north side of a wall, or they will not produce good flowers, as they do not like exposure to the drying influence of the sun.

Herbaceous Plants.—Amongst these we have now in bloom several fine Spiræas, Tradescantias, Campanulas, Asters, Achilleas, Potentillas, Lathyruses, Veronicas, Tritomas, Statices (such as S. latifolia and S. Fortunei), Pentstemons, Phloxes, Stenactises, and others. In order to have fine flowers the shoots should be thinned out a little and small earth basins formed around the roots of each plant for the retention of water. Cut over at about half the length of the stems such plants as have done blooming for the sake of neatness. Many kinds of perennials may yet be propagated from cuttings, as previously recommended, and also by means of seeds, which may be either sown in a border out-of-doors or in boxes in frames. Gather all seeds as soon as ripe, dry them, and dress them, and either sow them immediately or keep them till spring.

Indoor Plant Department.

Stoves.—Stove plants will now be fast maturing their wood, and should have more sun and air, but here the latter must never be admitted, even at this time of the year, in anything like the volumes that greenhouse subjects require. In this respect most growers commit serious error, for if stove plants—especially such as come from the hottest countries—are too much exposed to cold currents of air, it destroys all their energies. With stove plants a maximum of light, which may be obtained by keeping them elevated near the glass during the whole of their growing time, imparts strength and substance to the wood as it is formed, and does away with the necessity of subjecting them to treatment that stops all growth during the remainder of the season. A much shorter period of rest will suffice for these than for greenhouse subjects. The great heat we have lately experienced will have caused a rapid increase in the numbers of all insect pests, and unless means are being taken to keep them down, their destruction will be a work of considerable difficulty. The worst to contend with are mealy bug, as they insinuate themselves into every crevice about the plants, and even in the ties and sticks supporting the same. There is no better way to eradicate these at this season than to use a soft sponge and give them a thorough hand-washing, as any mixture made sufficiently strong to destroy these marauders would be sure to injure the leaves in their present tender state, if not to destroy the plants altogether. The same remark applies with less force to brown scale, but as they do not increase at anything like the rate of mealy bug, it is a much easier matter to hold them in check, or even to get rid of them altogether. Thrips are more readily dealt with either by dipping the plants in strong Tobacco-water, or by giving the house two or three good fumigations in quick succession; but where the plants are in pots, and of moderate size so as to admit of being readily handled, the former method is the best, as the Tobacco-water not only destroys the living thrips, but those in embryo as well, especially if made more penetrating by having a small lump of washing soda dissolved in it, or an ounce or so of Fowler's Insecticide added to each gallon of water. This will soak through the varnish-like covering with which the thrips' eggs are coated over, and so carry the strength of the Tobacco in with it, thus making much cleaner and more durable work than the smoke alone would do. In cases, however, where large plants, roof climbers, &c., are infested with these pests, the latter mode of extirpating them must be resorted to as the only practicable means of getting rid of such troublesome enemies. Those who wish to be clear of the above should assail them the moment they show themselves, for if left alone for only a short time during the present hot weather they do a great amount of injury, and entail a vast deal more labour and time in the end. Where roof climbers are grown all superfluous growth should now be cut out, so as to admit plenty of light and air to the plants beneath, to aid them in maturing their growth. No stove, however small, should be without a plant of Bougainvillea speciosa, which can either be grown in a pot or planted out, according to the space that can be allotted to it. Whichever it may be, the roots should be entirely under control, and the top so trained as to be near the glass and fully exposed to the sun, without which it is impossible to ripen the wood properly, and unless this be thoroughly matured they seldom produce much flower. To assist in this ripening process, the plants should now be kept moderately dry at the roots, increasing the same by degrees till flagging takes place, as it is only rather severe drying that will cause them to produce a profusion of those lovely mauve-coloured leaf-bracts that renders them so exceedingly attractive and of such great value for cutting. By getting them to rest early, they may be had in bloom much sooner than if they are allowed to grow on and ripen off naturally in the autumn; and as the coloured leaflets last for some months, rather improving by age than otherwise, it is very desirable to have them in as soon as possible. In cases where the growth of these has been allowed to become at all thick, the strongest and most sappy-looking pieces should at once be cut away in order to admit light and air to those of medium size, which alone produce flowers in a free, satisfactory way. The robust, free-growing habit of B. glabra, when planted out, renders frequent attention necessary to keep them properly thinned and regulated, without which they soon become a confused mass, and are then most difficult to separate or get into anything like order again, the hook-like thorns lacerating the leaves of the shoots left on, rendering them shabby in appearance. The supply of water to this variety should now be somewhat diminished, but not to anything like the extent advised for the other, as B. glabra will continue to grow and produce flowers till near Christmas, if in a suitable situation. Any of this variety in pots that have been kept back for late blooming should now be afforded plenty of light and air, and liberally assisted by giving them plenty of manure water, as when confined to so limited a feeding ground, their free-flowering habit renders help in that way absolutely necessary to maintain the plants in health and keep the leaves a good colour. Allamandas that have been loosely trained or slung to the rafters, with a view of transferring them to suitable trellises for removal to the conservatory, or for other uses, should now be carefully tied down by bringing the shoots into position gradually, so as not to give them too sharp a bend, the effect of which would be either to break them off or to stop the flow of sap, and so starve the flower-buds. Any plants of these that were got into bloom early and are now becoming exhausted, should be placed in light, sunny positions in the stoves, where they can have plenty of air to assist in maturing their wood. By getting a portion of the stock early to rest, the same may be started immediately after the turn of the year, so as to get them in bloom at a time when their large, showy flowers are most valuable. Cuttings struck in the spring may still be grown on by giving them a shift into larger pots and keeping them in a growing atmosphere, where they can get plenty of light, to prevent them from drawing.

Cinerarias should at once be placed in their flowering-pots—6 in. or 7 in. in diameter is large enough for ordinary purposes—and, if the plants are well managed, these will grow them to a size that will produce fine heads of bloom. They are very subject to green fly, which must never be allowed to get established upon them, or both appearance and vigour will be sacrificed. As soon as the pots are filled with roots they should be regularly supplied with manure water. Never allow them to become cramped at the root before moving them into their flowering-pots, or they will not attain their wonted strength and size. Grow them in good loam, with one-fifth of rotten manure and leaf-soil in equal parts added, and as much sand as will keep the soil porous. They do not bear Tobacco smoke well, as it often injures the leaves if applied of sufficient strength to destroy aphides, to free them from which dipping in a pailful of Tobacco water is the best remedy.

Primulas.—These continuous winter-blooming plants should also be moved into 6-in. flowering-pots. They are somewhat spare-rooting subjects, and do not require a great body of soil to grow in, being more subject to damp off in large pots. Drain them well, using soil similar to that used for Cinerarias. Put both in pits or frames, facing northwards, and give air freely, taking the lights completely off the Primulas during the day; but do not allow them to get saturated with rain. In very bright weather, a piece of old fruit-tree netting placed over them will be useful to break the sun's rays, but will not obstruct the light as a mat would do. If too thick material be used the leaves get drawn up weakly, in which state it is impossible for them to flower as they ought.

Indoor Fruit Department.

Vines.—Wasps and large flies are frequently very destructive to Grapes where they are hanging ripe on the Vines. They not only destroy whole berries, but make small holes in others, necessitating their being cut out, and spoiling the appearance of the bunch. Hamburghs and other somewhat thin-skinned kinds are generally attacked to a greater extent than thick-skinned varieties. In order to keep these insects out of Vineries, in which there is ripe fruit, nail some closely-meshed netting over the ventilators; but, where the ventilators are so arranged that the netting cannot be used in this way, small bags should be made of it, in which the bunches should be encased. This generally proves a safeguard, though not so effectual as the other. Grapes are often put into paper bags to keep them from such depredators, but that is a bad practice, as the berries often decay when air cannot reach them, and unless the paper is removed daily—an operation which seriously damages the bloom—numbers of berries may be rotten before the evil is detected. Bottles containing sour beer are hung up amongst the bunches as traps, but for one wasp or fly that enters them two keep out. Do not let the surface soil in Vineries, in which the fruit is ripe, become dust dry. A little moisture in the atmosphere does little harm, so long as there is a circulation of fresh air, and the dust does not rise and settle so freely on the bunches when the soil is a little damp as when it is dry. When the Vine borders are finally watered the soil may be raked finer than it has hitherto been, in order that its surface may look tidy for the remainder of the season.

Pines.—Lose no favourable opportunity of admitting a free circulation of fresh air to all Pine plants in active growth, so as to keep them dwarf and stocky. Plants which are drawn up tender never do well throughout the winter. Look over the first potted suckers, and water such as are dry and have their roots appearing on the outside of the ball of soil. Do not be in a hurry to expose them too much to sunshine, especially if they have been kept somewhat closely shaded while making roots. Old plants will, however, bear and be benefited by fuller exposure to the sun now than earlier in the season; care should be taken, however, not to allow the leaves to become brown, or the completion of their growth may be retarded.

Kitchen Garden.

Spring Cauliflowers are an important crop in most places, and require a considerable amount of attention for a long period in order to secure a satisfactory result. The time of sowing has great influence upon the future crop turning out satisfactory or otherwise, for if sown too early—and a very few days will sometimes make an important difference—many of the plants may button or turn in prematurely, and thus be useless. To obviate this difficulty wherever it may have been felt, it will be better to divide the seeds into three portions and make three sowings, at intervals of about a week or ten days. In the north, the first sowing should be made about the 10th of this month; in the midlands, about the 15th; and in the south, from the 20th to the 25th; and the last sowing, at least, should be made in a frame. In cold, late situations I have always found it the best and surest plan to delay sowing till about the middle of September, and to sow in boxes in a frame; but, after the seedlings have come up, in order to have sturdy little plants, abundance of air should be given. Fill up all vacant ground in the kitchen garden with winter greens as Peas, Broad Beans, Cauliflowers, and Potatoes are cleared off. It is important that no time should be lost in this kind of work, as delay at this period of the year is more injurious than at others, inasmuch as these crops are not allowed time to grow to a useful size before winter has set in. The plants may now be put in closer together than would be advisable earlier in the season, as they will not get so large. If there happens to be a vacant place at the north side of a wall, some Cottager's Kale may be planted upon it. This will, after the first cutting in the spring, throw up quantities of sprouts without running to seed so early as it would grown in a situation under the influence of more sun. By this means a supply of useful greens will be secured that will last until early Cabbages are ready for use.

Turnips.—The ground that is cleared from Potatoes, Peas, French Beans, and similar crops should at once be sown with Turnips; not a day should be lost in getting the seed in, as upon this depends the crop getting to a useful size before growth is stopped by the cold weather.

Cabbage.—Make another sowing of Cabbage. Where a serviceable crop is required there is nothing better than Enfield Market to come in after any of the smaller more early kinds. Some object to its being too large; this objection may hold good if it be allowed to attain its full size, but the best way is to commence cutting it early enough, and there is no variety I have ever grown that makes such a quantity of useful sprouts after the first cutting. To assist the production of these, from the crop that has already been cut the old leaves should be cleared off the stools; by this means slugs and caterpillars that harbour in them are got rid of. The ground should then have a good soaking of moderately strong manure water.

Radishes.—Of these a sowing should be made every three weeks now in rich ground; these will be much better in quality than such as have been coming on through the middle of summer. Where Mustard and Cress are required they should be sown every ten days; these, with Radishes and Lettuce, must, to have them fit to eat, be regularly well watered, without which it is impossible to have salad of good quality. I have heard some gardeners speak against the necessity of watering in the kitchen garden, asserting that by deeply trenching, sufficiently manuring and mulching, watering was not required; but the chief reason why the productions of the French salad growers are better than ours during the summer months is that they are continuously supplied with copious applications of manure water, so as never to allow the crop, from the day the seeds vegetate until it is gathered, to want moisture.

Celery, more than most crops, will now need to be well soaked with water. After a good soaking, 1 in. or 2 in. of soil may be put to even the late crops; it will prevent the roots, which lie close to the top and are still further encouraged to the surface by watering, from being so soon dried up, and will diminish evaporation.

Late Peas should have a ridge of soil drawn on each side of the row, and within 2 in. of it, so as to confine the water, which should be applied without stint, or it will be impossible to keep them from becoming a prey to mildew. One good drenching, so as to moisten the soil down as deeply as the roots descend, will be of more service than six partial applications. Scarlet Runners must be similarly treated, or the produce will not only be small, but the bearing capabilities will be so far reduced that the blooms will refuse to set at all. These and all other crops will be much benefited by mulching 3 in. thick with littery manure. If the land be at all poor, nothing is better than to use it fresh from the stable, laying it on before the water is given. By this means the fertilising elements of the manure are immediately washed down to the roots of the crop, upon which they at once act beneficially.

Extracts from my Diary.

August 12.—Sowing Black-seeded Brown Cos, Stanstead Park, and All the Year Round Lettuces. Putting in cuttings of Heliotrope, Fuchsia, and Tricolor Pelargoniums. Planting Endive and Lettuce. Preparing soil for Pine-apples; potting and re-arranging the Black Jamaica Pine-apples. Cutting back Laurels and other shrubs overhanging the walks in the pleasure grounds. Stopping the laterals through all the Vineries. Watering Celery, Lettuce, Endive, Cabbage, and Walcheren Broccoli, the weather being dry.

Aug. 13.—Sowing Sweet Basil in pots; also Mustard and Cress. Potting a few more Cinerarias and Primulas. Putting in Pelargonium cuttings. Putting one houseful of Smooth-leaved Cayenne Pines into fruiting pots, using equal parts of loam and peat, and adding abundance of silver sand. Mowing. Clearing off Strawberry runners. Watering Carrots, Onions, Celery, Lettuces, Endive, Cabbage, and Broccoli plants.

Aug. 14.—Sowing Chirk Castle Black Stone Turnips. Potting Cyclamens and Coleus. Putting in a few more Centaurea cuttings. Lifting Ashtop Fluke Potatoes. Thinning Spinach, Lettuce, and Endive. Turning manure previously mixed with salt and soot for general crops. Mowing, weeding, and cleaning in the pleasure grounds Gathering first outdoor Peaches. Watering flower-beds; also Scarlet Runner and Dwarf Beans, and the early Peach house.

Aug. 15.—Potting and re-arranging a large house of Smooth-leaved Cayenne Pines. Putting tiffany over open Vinery lights to keep off wasps and flies. Looking over Peach trees and removing nails, ties, and leaves where not required. Picking over carpet bedding. Turning manure for a Mushroom bed. Mowing, weeding, and clearing in the pleasure grounds. Watering late Peas, Celery, and Strawberry runners in turf.

Aug. 16.—Sowing last crop of Spinach; also Mustard and Cress. Covering Peach walls with netting. Pulling up all spring-sown Onions and laying them out with the roots upwards to dry. Lifting part of a collection of Potatoes. Clearing off a batch of Broad Beans. Watering Peas, Celery, Lettuce, Endive, Strawberry runners, and Pines.

Aug. 17.—Potting and putting away Pine suckers. Looking over all Vineries, and taking off laterals and shanked berries. Renovating manure linings round all frames. Picking over and weeding carpet bedding. Cleaning gravel walks in kitchen garden. Clearing off a piece of Peas and hoeing the ground ready for other crops. Cleaning up mould yard, sheds, tools, &c. Fruit in use for dessert: Pines, Melons, Grapes, Peaches, Figs, Cherries, Pears, and Apples.—W. G. P., *Dorset.*

Dioscorea retusa.—This elegant plant has been several times exhibited in charming condition by Messrs. Veitch, who obtained it through Colonel Trevor Clarke from South Africa. The name will suggest to the horticulturist that it is a near relative of Dioscorea batatas, the Potato Yam. There are in cultivation—or should be, according to the books—about a dozen species of Dioscorea, and all of them are elegant plants; indeed, the one named above, which has been tried as a substitute for the Potato, is handsome enough to have a place in the garden without any regard to the suitability of its roots for the table. In respect of relative beauty, perhaps, Dioscorea retusa is the most desirable species, and it has the advantage of being nearly hardy, so that if planted out in some of the more favoured localities in the south-west it might remain to become established as a valuable adornment of a trellis or wall. It is, however, in London, best treated as a cool house plant, the comfort of a moderate degree of warmth with shelter being favourable to its full development. In common with others of the genus, this is a free-growing, twining plant. The leaves are distinct in form and strikingly veined; the flowers are produced in pendulous clusters, and are in themselves inconspicuous, but collectively they constitute a very pleasing feature, their delicate form and soft creamy colour aiding the effect resulting from their elegant disposition. They are, moreover, agreeably fragrant. When shown by Messrs. Veitch at the great International Exhibition, at Brussels, it attracted much attention and deserved admiration.—"The Gardeners' Magazine."

GARDEN BOTANY.

(Continued from p. 116.)

Disk, Nectary, Staminode.

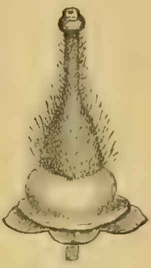


Fig. 420.—Pistil of Trichilia, invested with a cup-shaped disk.

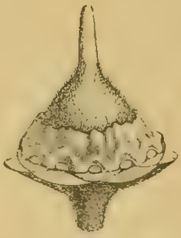


Fig. 421.—Pistil of Balanites; stamens cut away, revealing the disk encircling the ovary.

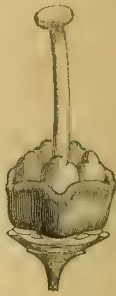


Fig. 422. — Pistil of Diosma rubra, showing the cup-shaped disk immediately surrounding the ovary.

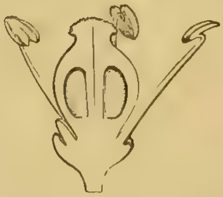


Fig. 423.—Section of a flower of the Grape Vine after the petals have fallen away, showing a lobe of the disk on the left.

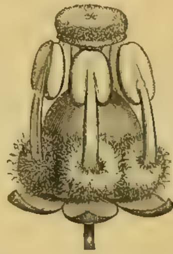


Fig. 424.—Disk of Cedrela Toona, with the stamens seated upon it.

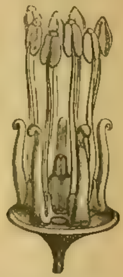


Fig. 425.—Flower of Xanthoceras; the sepals and petals removed to show the disk, consisting of five free, horned processes outside the stamens.

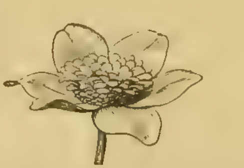


Fig. 426.—Double flower of Anemone, the stamens being changed into staminodes. Reduced.

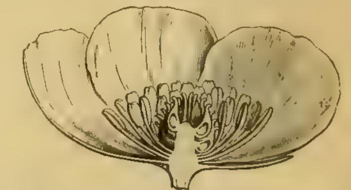


Fig. 427.—Section of a flower of Buttercup, to show the insertion of the free one-ovuled ovaries on the conical receptacle.

These terms have been so differently employed, confused, and interchanged by writers on botany that it seems better to treat of them under the same head. Hitherto we have only mentioned sepals, petals, stamens, and pistil, but there are often other bodies in a flower coming under one or more of the above denominations. The term disk is applied to the central flowers of such inflorescences as that of the Daisy, and its application is explained under the definition of a capitulum or flower-head. The solid axis from which the scales of a scaly bulb proceed is also called disk. But here we have to deal with what may be termed the floral disk. In many books the floral disk is defined as any body or bodies that intervene between the stamens and pistil, but this is a very imperfect definition. In general terms the floral disk may be described as a fleshy excrescence, or outgrowth of the floral axis (receptacle or torus), but its position in relation to the other parts of the flower is very varied. In form, also, it exhibits numerous modifications. It is continuous and cup-shaped and immediately surrounding the ovary (figs. 420 to 422), or lobed, or consisting of separate parts (sometimes called nectaries), as in Sedum, &c. In Cedrela (fig. 424) the disk is lobed and the stamens are seated upon it, and in Xanthoceras (fig. 425) it consists of five free, horned processes between the petals and stamens. A very common condition may be seen in the Rose and Lady's Mantle, where it lines the tube of the calyx or cup-shaped expansion of the floral axis (see some of the figures illustrating the floral receptacle). The flesh of the Apple and Pear is for the greater part of the same nature. The term nectary is sometimes given to the disk or the parts of the disk, as well as to glands or other bodies in the flower which secrete honey, but it is rarely used now. A staminode is a metamorphosed stamen. Thus the Anemone (fig. 426) becomes double, in consequence of the stamens being transformed into staminodes or barren petal-like bodies. In Lopezia there is one fertile stamen and one staminode; and stamens frequently alternate with staminodes.

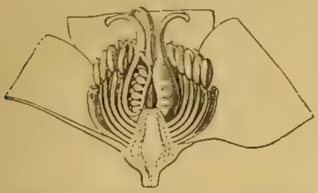


Fig. 428.—Section of a flower of Helleborus fœtidus, with a conical receptacle and several many-ovuled ovaries.

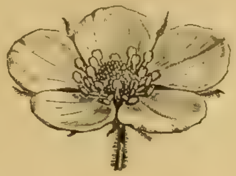


Fig. 429.—Flower of Strawberry.

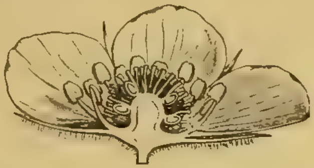


Fig. 430.—Section of a Strawberry flower, showing the ovaries inserted on the conical receptacle, which afterwards enlarges and becomes fleshy.

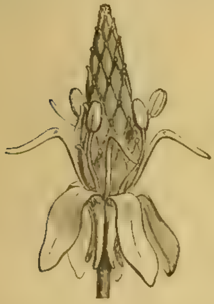


Fig. 431.—Flower of Myosurus minimus.

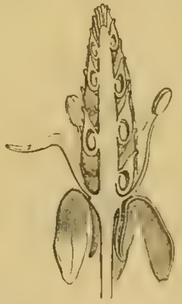


Fig. 432.—Section of a flower of Myosurus minimus, showing the insertion of the numerous free ovaries on a long slender receptacle.

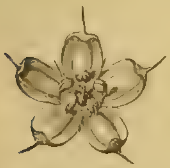


Fig. 433.—Flower of Paronychia serpyllifolia.

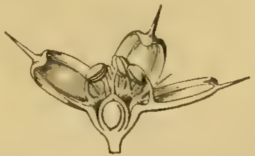


Fig. 434.—Section of the same, showing the one-celled, one-ovuled free ovary in a cup-shaped receptacle.

The Floral Receptacle.

This should not be confounded with the receptacle of an inflorescence, which is defined in the paragraph on the capitulum. The floral receptacle is the extremity of the flower-stalk (peduncle or pedicel), upon which the parts of the flower are seated. Commonly, the receptacle is very short, all the parts of the flower being inserted very close together on the flattened end of the pedicel, but there are many departures from this, some of which are very remarkable in their ultimate development. In the Buttercup (fig. 427) and in the Hellebore (fig. 428) it is conical, the former having several series of one-seeded ovaries, and the later one series of several-seeded ovaries. The floral receptacle of the Strawberry (figs. 429 and 430) is comparatively small when young, and the ovaries are close together, though it subsequently enlarges into a fleshy, spheroidal, or irregular body, the mature seed-vessels being thereby separated from each other. In the Mousetail (Myosurus minimus—figs. 431 and 432) the receptacle is very much elongated, even in the flowering stage. In many cases the receptacle is depressed instead of being elevated; thus in Paronychia (figs. 433 and 434) the one-celled one-ovuled ovary is seated in a cup-shaped receptacle, and the same thing occurs in Alchemilla (figs. 435 and 436), though here the fleshy disk almost completely closes over the ovary, giving it the appearance of being inferior. In consequence of this mode of growth of the receptacle, the insertion of the stamens and other parts of the flower is above the pistil. Already we have had occasion to allude to the flower of Calycanthus to point out the gradual transition from bracts to sepals, and sepals to petals. On reference to fig. 437 it will be

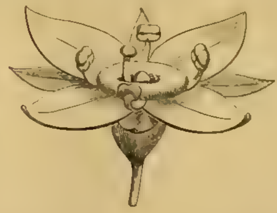


Fig. 435.—A flower of Alchemilla. Enlarged.

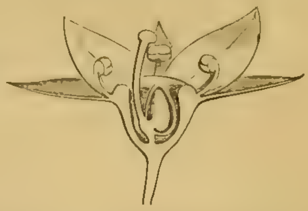


Fig. 436.—Longitudinal section of a flower of Alchemilla, showing the free ovary having a basal style, and seated in a hollow receptacle.

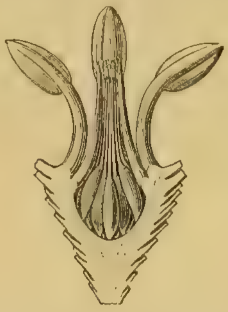


Fig. 437.—Section of a flower of Calycanthus, showing the insertion of the ovaries in the concave receptacle, and the bracts and sepals outside of the same.

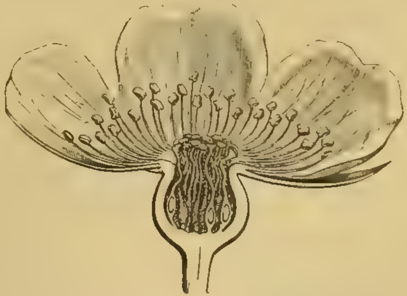


Fig. 438.—Section of a flower of Rosa pimpinellifolia, showing the insertion of the free ovaries in the urn-shaped receptacle.

seen that the ovaries are inserted within a hollow receptacle, the floral envelopes outside of it, and the stamens around the rim. Almost anybody would at first regard the fruit of a Rose as inferior and the separate seed-vessels it contains as seeds; but, on examining a flower, it will be found that there are numerous free ovaries in an urn-shaped receptacle, as shown in the section (fig. 438). There is yet another type of receptacle. The more or less elongated receptacles illustrated by figs. 427 to 432 present no naked space between the different whorls of the flowers. In Capparis (fig. 439) the sepals, petals, and stamens are inserted nearly on the same plane, whereas there is a long interval between them and the ovary, which is borne on a slender, stalk-like elongation of the receptacle termed a gynophore. The ovary and the stamens of the Passion-flower (fig. 440) are carried up some distance above the petals; and in Silene (fig. 441) the petals also are carried up, so that there is a considerable space between their insertion and the base of the calyx.

W. B. Hemsley.

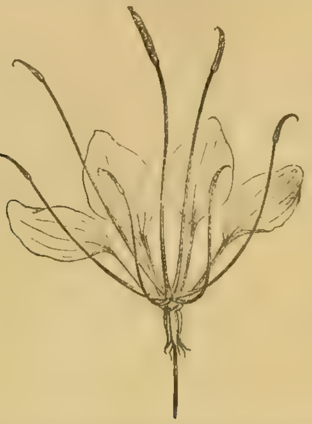


Fig. 439.—Flower of Capparis spinosa; the ovary is borne on a long slender stalk (gynophore) exceeding the stamens.

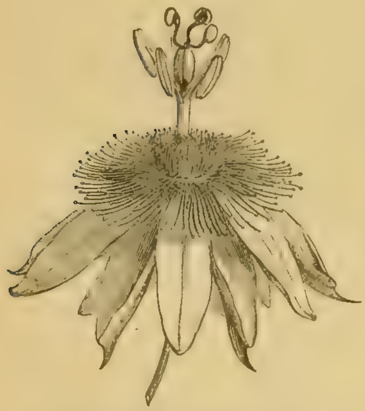


Fig. 440.—Passion-flower; the stalked ovary is on a level with the anthers.

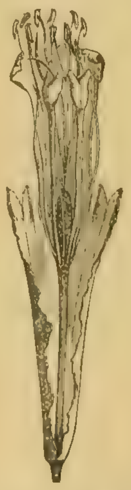


Fig. 441.—Flower of Silene italica laid open to show the space between the insertion of the calyx and petals.

Vegetation of Cyprus.—Speaking of the flora of this island, Drs. Unger and Kotschy in their work "Die Insel Cypern," say:—"There is great resemblance in the vegetation throughout the island to the Mediterranean. In February and March there is upon all the river edges a profusion of Lilies; in April and May on the land side is one carpet of flowers. During the heat, however, the land assumes a yellow tint. Pine forests abound, Olives, Myrtles, and Laurel trees. As far as the island has as yet been explored, we know that there are 1000 different sorts of plants. No island can show such a rich forest growth as Cyprus.

THE FLOWER GARDEN.

FROM THE BIRTH TO THE DEATH OF THE LILY.

In the hope that some of the readers of The Garden may have had an opportunity of dissecting a few bulbs in the manner pointed out by me in my last paper (see p. 91), I shall now proceed a few steps further with my remarks on the growth of the Lily. Those parts of the subject most worth attention at this time are the decay and death of the parent bulb and the early lifting and re-planting of its successor, the new bulb. On these points some writers have no faith, and in order, therefore, to raise the knowledge of the Lily from the confused state in which we find it, let us endeavour to calmly discuss the facts. "W. J. T.," of Brixton, says: "I do not venture to express an opinion on the question of the renewal of the bulb so ably discussed by 'Dunedin,' but I may say that when re-potting I have never discovered traces of a decayed old bulb." Now if "W. J. T." will consider for a moment, I think he will find that there is nothing antagonistic to my doctrine in the fact he relates. In the month of September—when he re-potted—there was no likelihood of the old bulb being reduced to mere traces of decay. In fact, it was the old bulb itself he was then handling and re-potting, the new bulb being within it. If he will refer to my paper (see p. 91) he will see that, when lifting and re-planting several clumps of Lilies, I dissected a bulb of L. candidum, and had to pick off twenty-five old scales before I cleared all away from the new bulb. If he will do this now, he will find, as I did, a distinct new bulb within the old bulb, and the old scales still, apparently, in good health. In connection with "W. J. T.'s" remark, "Amateur" says: "The main questions to be decided are, whether or not the bulb after flowering decays; and, secondly, whence springs the flower-stem of the succeeding year. 'W. J. T.' so far corroborates my experience that he has 'never discovered traces of a decayed old bulb.' But in order to settle the question beyond dispute, I will grow in pots different bulbs so close to the surface that the tops of the bulbs may be readily exposed and watched during the season; and in October or November I shall be most happy to turn them out and show 'Dunedin' the results." "Amateur" here promises to do more than he can perform. He may certainly plant the bulbs in the manner he proposes; but neither in October, nor November, nor in any other month will he be able to prove that the old bulb does not decay and die. The present is the time, however, without waiting for October or November, that he can settle the question. Let him dissect any number of bulbs, and he will find that it is an entirely new bulb that "is now shooting up from the precise centre," as he calls it, "of the (old) bulb as previously," pushing aside the old stem as it grows larger and larger. M. Max Leichtlin, of Baden-Baden, seems to place great great faith in "Amateur's" proposed experiment, as he says: "I am of opinion that 'Amateur' is right in his views, and that he will certainly be able to prove that the old bulb does not decay every year." M. Leichtlin, in believing that such will be the result of "Amateur's" experiment, is leaning on a broken reed. He can, however, prove the case for himself, without loss of time, by dissection, as I have explained; and if he will, six months hence, take up a similar bulb, he will see a vast difference between the appearance of the scales of the old bulb as they now are and the scales as they will be then, as decay will have more distinctly marked them for its own. I ought not, however, to be so much surprised at M. Leichtlin's opinion when I read that he, like "Amateur," judges more from outward "visible growth" than from any examination of the interior reproductive organisation of the bulb. As to "Amateur's" second proposition, viz., "Whence springs the flower-stem of the succeeding year," a settlement of the first will, as a mere matter of course, settle the second question.

With respect to the second part of my subject, viz., "Early lifting and replanting," I may mention that, on looking over the columns of certain horticultural periodicals published within the last two or three weeks, I have noticed that amateurs and Lily growers in general are told "that it is detrimental to disturb the bulbs before they are quite matured, which is always denoted by the foliage turning yellow." This is erroneous teaching. The Lily is cultivated by most of us for the sake of its beauty, and we therefore feel an interest in causing it to bloom as early and as long as possible. Were it not for this, we might safely lift and transplant the bulb before it had half done flowering, for the growth and roots of the new bulb within it would be by this time so far advanced as to enable it to take care of itself. Flowering, we are told, is an exhaustive process, drawing out the whole of the nourishment that has been stored up in the cells of the scales. To this I may now add that seeding is even more exhaustive, injuring very materially the new bulb. If, therefore, the stem be not cut down immediately after flowering, abortive attempts at seeding will be made by the stem, and in doing so it will draw upon the resources of the new bulb, the materials of growth, or elaborated sap, in the scales of the old bulb being all exhausted. The old stem, though kept green, can give back to the new bulb nothing whatever in return for what it takes from it—all these abortive, or even successful, attempts at seeding being just so much robbery of the growth and strength of the new bulb. I say, therefore, to amateurs especially, Cut down the stem the moment the bloom is fairly over. This advice, though not directly, is indirectly corroborated by your American correspondent, Mr. Hovey, of Boston, Mass., in Vol. XIII., p. 387. In speaking of L. candidum, he says: "They should always be transplanted, if they are to be removed at all, the very moment the last flower has faded, cutting away the old stem as low as possible." This is in accordance with my experiences. And though at present Mr. Hovey thinks that L. candidum "has no analogy whatever, as regards treatment and growth, with many other Lilies," he will find, on close examination, that the reproductive organisation is the same in all true Lilies. The remarks of "J. S. W." (p. 105) and "A. K." (p. 100) shall have my earliest attention. Dunedin.

CULTURE OF CAMPANULAS.*

Campanulas have been long cultivated in British gardens, numbers of them having been introduced from the Continent as early as 1597. Of those I may name C. Medium, from Germany; C. pyramidalis, from Carniola; and C. Speculum (Venus' Looking-glass), from the south of Europe. A number of years have elapsed since I first commenced to improve them by careful cross-breeding; but at the outset I laboured for a year or two without knowing that in this genus the flowers are self-fertilised before they expand. It is, therefore, needful to cut up the flower-buds, in order to remove the stamens, and, as soon as the flowers expand, to fertilise the pistil with the pollen of a different kind. After that, the flowers must be protected from wet or other accidents, and as soon as the seed ripens, it is best to sow it at once in a cold frame or greenhouse, and, as it is very small, the soil in which it is sown must be made very fine on the surface before sowing. Give the pots a good watering, then dust the seed on the surface and cover the pots with a piece of glass. This will keep in the moisture and prevent the young plants from being injured by too much sun. If the soil becomes too dry, dip the pots into a pan of water up to the rim, a process which will prevent the seed from being disturbed in the pots. If the seed be good it will germinate in two or three weeks, although part of it may possibly be dormant until spring. My first batch of seedlings from hybridised flowers showed one peculiarity: they came with variegated foliage; in fact, a portion of them had pure white cotyledons, but these soon perished. As those that were slightly marked grew into good plants they lost their variegation, but next summer all the plants that showed the slightest marks of white produced white flowers of different shades.

As regards cultivation, Campanulas are in no way difficult, and they are remarkably free from most of the pests that frequent other kinds of plants. C. pyramidalis (blue and white), C. Hendersoni, C. Medium (including the varieties of calycanthema), and C. grandiflora grow from 2 ft. to 4 ft. high when well treated and might be useful for greenhouse decoration, while on the front of stages or in hanging baskets might be placed such sorts as C. Barrelieri, C. fragilis, C. garganica, C. muralis, and C. turbinata. For the herbaceous border and rockery Campanulas are indispensable, but it is important that they be supplied with good rich soil and plenty of drainage. A rockery for such plants as these must not be a mere heap of earth with a few stones laid on the surface; it must consist of plenty of stone, crocks, or rough gravel mixed with the soil, which ought not to be useless rubbish, but of such a quality as will maintain plants in good health and vigour. Damp about the necks of Campanulas is about the only thing that requires to be guarded against. As to propagation, they are easiest raised from seed, which should be sown in pots well guarded from slugs and snails. In the case of particular varieties the stems and roots must be used for the purposes of propagation, or they may be divided in spring.

The following selection will be found suitable for rockeries, however small, for borders, or for pot culture, viz., C. Allioni, cæspitosa, fragilis, garganica, Haylodgensis, hederacea, isophylla, i. alba, pulla, pumilla, p. alba, Raineri, rhomboidea fl.-pl., rotundifolia, r. alba, Smithi, turbinata Dicksoni, and Waldsteiniana. For large rock gardens, in addition to those just named, I would recommend C. aggregata, alliariæfolia, alpina, betonicæfolia, bononiensis, carpatica, c. alba, elegans, grandis, grandiflora, Hendersoni, H. alba, Hosti, longiflora, nitida, Portenschlagianda, rubra, soldanelæiflora, tenella, turbinata macrocarpa, urticæfolia fl.-pl., Van Houttei, and Wanneri. These should be placed where they are not likely to get overrun with other strong-growing plants. Of tall-growing and vigorous sorts suitable for borders or the wild garden I would select C. celtidifolia, grandis, glomerata fl.-pl., lactiflora, latifolia, macrantha, m. alba, persicifolia (single and double), pyramidalis, p. alba, and sarmatica. Of annual and biennial species useful for borders and the flower garden, the following will be found to be suitable, viz., C. Lorei, macrostyla, Medium, m. calycanthema, pentagonia, Speculum, and thyrsoidea.

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* Paper read by Mr. James Grieve, Pilrig Park Nursery, at a recent meeting of the Scottish Horticultural Association.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Eulalia japonica.—There appears to be some slight confusion with regard to this plant, which perhaps arose in the first instance through the variegated form having been figured in the gardening papers under the above name only, without the addition of variegata. As a rule, we usually get the typical forms of plants and trees before we receive their varieties, and this happened in this case. The typical Eulalia is of somewhat freer growth than the variegated form. It has bright green ample leafage, with a distinct silvery midrib, and appears to be a little hardier (as might be expected) than the variegated form; the yellow-barred one is the less robust and hardy of the two. Both are highly ornamental.—T. Smith, *Newry*.

Oxalis luteola.—This is one of the most lovely of Oxalises. When planted out, its close compact growth clasping the soil and neat circular outline remind one of Sempervivum tabulæforme. The leaves are three-lobed, hairy on each surface, and beautifully ciliated along the margins. The flowers in the bud state are of a soft creamy-yellow, ½ in. in length, but when open pure white, shading to yellow towards the centre, and as large as a half-crown piece. In pots under glass the foliage gets higher and the plant loses that close compact habit which characterises it out-of-doors; but even indoors the habit is better than that of any Oxalis with which I am acquainted. Some potfuls of it are now flowering freely, eight or ten flowers being expanded at the same time, thus forming an exceedingly attractive object.—P.

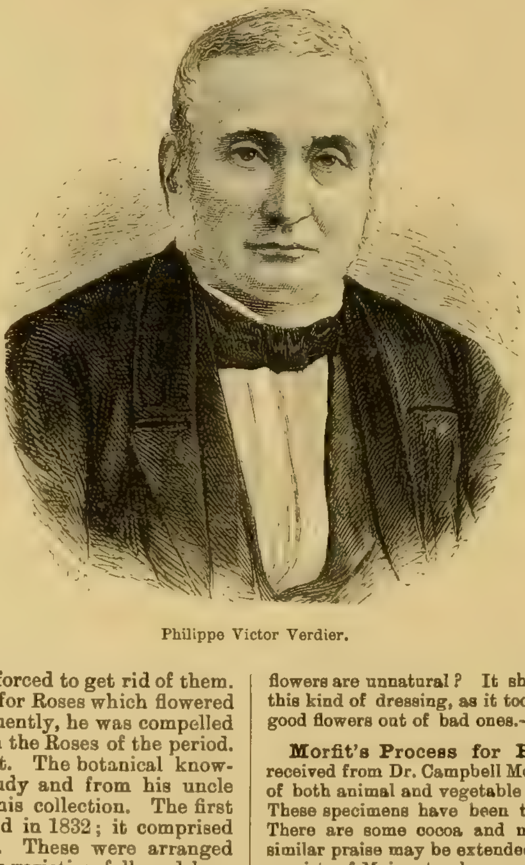
Arum italicum in Cornwall.—Mr. J. Ralfs, of Penzance, has determined the Arum in several localities in West Cornwall to be A. italicum. It grows in Love Lane, close to Penzance; at Trereife, by the road to the Land's End, abundantly; and in three or four spots between Leland and St. Ives. The ordinary species, A. maculatum, however, also occurs; but Mr. Ralfs has not been able to visit all the recorded stations, so as to trace the actual distribution of each species; he has not seen A. maculatum nearer Penzance than at Marazion; it also occurs near Helston and Truro. A. italicum grows in more shady spots than A. maculatum. This is a very interesting determination, and will necessitate a search throughout the west of England. In Jersey and Guernsey A. italicum appears to be the only species; at least during my short visit the other species could not be detected.—Henry Trimen, in "Journal of Botany."

Ageratum Imperial Blue.—This is dwarf in habit, branching, and bears large, fine blue flowers on every shoot, thus forming a compact cushion of blossom. For pot culture this Ageratum would be well worth attention.—S.

M. PHILIPPE VICTOR VERDIER.

Subjoined is a portrait of this eminent French Rose grower, who died at Paris in February last in his seventy-fifth year. M. Victor Verdier, as he was generally called, may be said to have been one of the fathers of modern Rose growing in France, and ought to be held in affectionate remembrance by all lovers of the queen of flowers. M. Verdier was born in 1803 at the little village of Yères, in the department of the Seine-et-Oise, and first began serious work under his uncle, M. Jacques, head gardener to the Duke of Orleans, at the Chateau de Neuilly in 1822, when he was barely nineteen years old. To the joint efforts of M. Verdier and his uncle we owe a number of well-known varieties of the Rose, such as Rosa sempervirens, Adelaide d'Orleans, Felicité Perpetue, still our best Arch Rose, Princess Louise, Princess Marie, Melanie de Montjoie, and Leopoldine d'Orleans, all of which are still universal favourites. It was about this time that M. Verdier produced the standard Rose General Athalin, from whose seeds the first hybrid climbing seedlings were produced which were the origin of all the other climbing hybrids of which we are at present in possession. His first establishment, devoted entirely to the cultivation of Roses, was founded at Neuilly in 1827, one of its first fruits being the climbing Hybrid Perpetuelle de Neuilly, which was soon followed by the Bourbon Rose Madame Breve, from a specimen sent home from that island by M. Breve, and later by the climbing Hybrids Madame Pepin, Madame Andry, Madame Knorr, François Lacharme, Olivier Delhomme, Vicomte Vigier, Turenne, La Brillante, Madame Furtado, and a number of others. He was the first to appreciate the beauty of the dark coloured Bourbon Roses, such as Proserpine Souchet, Charles Souchet, and Georges Cuvier, of which he was the first possessor and propagator. His first nurseries, as we have said, were formed at Neuilly, where he had purchased some land near the duke's chateau, and he had formed a complete collection of the then grown Roses, but it was only in 1838 that he left Neuilly to entirely devote himself to his own establishment. At this time Rose culture was at the height of its prosperity. New varieties began to take the place of old ones, and Victor Verdier, who possessed a complete collection of the latter, was thus forced to get rid of them. Fashion, that capricious goddess, was for Roses which flowered during the entire season, and, consequently, he was compelled to recommence his new collection with the Roses of the period. His successes now began to bear fruit. The botanical knowledge which he had acquired by study and from his uncle enabled him to classify the Roses in his collection. The first catalogue which he published appeared in 1832; it comprised the different varieties of each kind. These were arranged alphabetically with their old and new varieties, followed by a short description of their relative hardiness, the nature of their foliage, and the size and colour of their flowers. The list of Roses produced and sent into the market by M. Verdier is undoubtedly a long one, but it would be much longer had he not scrupulously rejected large numbers. The Roses which he gave to the world still keep their ground, and are as distinct in colour and form as the day they quitted his nursery. In addition to cultivating Roses, M. Verdier was also one of the first to produce seedlings of the hardy Gandavensis varieties of the Gladiolus, of which he obtained several remarkable varieties. In his professional capacity he was greatly respected. He was one of the leading members and founders of the Société Centrale d'Horticulture in 1827, as well as of the Cercle Horticole in 1841, which later on united itself with the first-named body, of which M. Verdier was one for many years of the vice-presidents. He also founded the "Portefeuille des Horticulteurs," a periodical which was stopped by the political events of 1848. In 1865 he deservedly received the cross of the Legion of Honour at the end of the great exhibition of that year. M. Verdier was a typical specimen of his class. To a large amount of special successful horticultural talent he added untiring industry, extended experience, unswerving probity, and in his private relations great amiability of disposition. The thorough honesty of his character and the soundness of his judgment frequently procured for him the honourable position of arbitrator in trade disputes, and his decisions were always accepted without a murmur by those who appealed to him. Towards the close of his life M. Verdier became partially blind, an affliction that, of course, interfered greatly with his physical activity, but which never prevented him from exercising his active brain until the hour of his death. We are indebted to his son, M. Charles Verdier, for most of the above particulars, and a photograph from which our illustration has been taken. He was, perhaps, one of the best judges of a Rose we ever had.

C. W. Quin.



Philippe Victor Verdier.

Disfiguring Carnations.—I entirely endorse your remarks as to the practice of dressing up the blooms of Carnations and Picotees for exhibition. It is not the flower as produced by Nature, but one shaped and fashioned as far as possible by the hand of the expert, who, with his tweezers, manipulates it in such a way as that it shall be not grown, but pulled into his ideal. If this practice were permitted with the Rose, for instance, what would be said? and if it be necessary for one flower, why not for another? An honest judge should disqualify all dressed flowers, and that would soon stop the process. The carding is identical with that usually applied to Asters, and is absurd. The purpose of it is to give to the flowers, however perfect and beautiful, the meritricious aid of an ornamental decoration; and judges, unfortunately, are swayed by it. It is pleaded in the case of Carnations that the card is with some necessary to make them assume a flat shape, otherwise they would be too much reflexed. Does it not occur to readers that all such flowers are unnatural? It should be the aim of all to discourage this kind of dressing, as it too often enables a skilled expert to make good flowers out of bad ones.—A. D.

Morfit's Process for Preserving Vegetables.—We have received from Dr. Campbell Morfit a number of interesting specimens of both animal and vegetable food preserved in a variety of forms. These specimens have been tested, as a rule, with excellent results. There are some cocoa and milk biscuits which are delicious, and similar praise may be extended to some alimentified maizena, which consists of Maize starch, cream or milk, sugar and gelatine, combined in a solid mass in the proper proportions to form a perfect food. Dissolved in hot water, this mixture ought to form a most nutritious and palatable food for infants. Some cocoa biscuits, in which the Cocoa-nut with the proper amount of milk, sugar, and flour, are combined, are also very nice; and some blanc mange stock, which needs only to be dissolved in hot water and corked to be ready for table, is very good indeed. Dr. Campbell Morfit has tried his process on Tomatoes, and, we are not surprised to find, with but a small amount of success. The delicate flavour of the Tomato is as evanescent as the bloom on a Peach, and it was almost a hopeless task to try to preserve it. A compound Tomato soup is, however, not bad, but it owes its flavour to other ingredients besides the Tomato. One of Dr. Morfit's most successful results is the Cocoa-nut biscuit, which ought to become a prime favourite, preserving, as it does, the original cool milky flavour of the real nut. The Lime-fruit juice biscuits we have already noticed; and some jujubes, in which Lime-fruit juice is combined with liquorice, cocoa, and gelatine, are very agreeable. The biscuits into whose composition pork and beef are said to enter cannot be considered successful. Taking the whole of Dr. Campbell Morfit's specimens, they are, on the whole, satisfactory, but we must not expect too much from his process, which seems to succeed perfectly in the case of vegetables whose flavour is somewhat strongly pronounced.—C. W. Quin.

ANSWERS TO CORRESPONDENTS.

Fairy Rings.—Can anything be done to stop the growth of Fairy Rings in lawn Grass?—S. C. G. [Fairy Rings are seldom or never seen where Grass is healthy and luxuriant. As a rule, they are confined to positions where the pasturage is poor, and where the soil is poor in nitrogen and potass. High manuring always has a deterrent effect on the growth of Fairy Rings, especially when highly nitrogenous manures are used.—W. G. S.]

Eradicating Bindweed.—How can I get rid of Bindweed? Every thing in my garden is more or less spoiled by it. The roots penetrate the shale below the soil.—A. R. W. [There is no way but to trench deeply and pick out every scrap that can be found. Constant pulling it up and leaving part of the roots in the ground only increases the stock, as the smallest particle soon makes a vigorous plant.—W. W.]

Weeds in Ponds.—How can I best get rid of weeds in a large piece of water?—E. C. S. [Mow the weeds twice a year—early summer and autumn. I do not know of any other method.—J. M.]

Grape Mildew.—Is Fosters' White Seedling Vine more subject to mildew than other kinds? I have a house which I planted four years ago, and for the last two years mildew has made its appearance, in both cases beginning with the White Seedling, and gradually extending to the other kinds, although in a much milder degree.—Q. [Yes; it is considered to be more liable to mildew than some of the more robust kinds. The best remedy for mildew is dusting the parts affected with flowers of sulphur the moment it makes its appearance.—W.]

Couch Grass in an Old Asparagus Bed.—Is it possible to get rid of Couch Grass in an old Asparagus bed without spoiling the bed? I have tried forking it out, but the roots of the Grass are deeper than those of the Asparagus.—R. E. P. [No. Why not, as the bed is an old one, dig the whole up? a young plantation is in every way desirable. The only other mode of keeping the Couch under is to well dress the beds with salt in the month of March. This is the best of all manures for Asparagus, and the Couch will, though not destroyed, be thereby kept down till quite the end of summer.—W. W. H.]

Liquid Manure and Vines.—Kindly inform me as to the best way of applying liquid manure to Vines in an outside border. Also at what stage of their growth liquid manure would be most advantageously applied.—G. H. G. [Carefully prick over the surface with a small fork and apply the liquid manure through a coarse rose. It will be better to repeat the watering several times, as all the soil will then be thoroughly wetted; from the time the berries have stoned until they begin to colour, manure water is most beneficially applied. After watering, a good mulching of half-rotted stable manure will prevent evaporation and keep the soil moist.—C. W. T.]

Red Spider on Peach Trees.—The Peach trees in one of my houses with an iron roof have been attacked by red spider, and I should feel much obliged if you would advise me what to do. The fruit is not fully grown, not having been forced at all.—P. H. [Use the garden engine freely night and morning; there is nothing so effectual as frequent washings with clear water. See that the borders are kept well watered; drought and an arid atmosphere are usually the predisposing causes of the attacks of red spider.—W. W.]

Blighted Violas.—I send you three plants of Violas in three stages of disease. Thinking it might be mildew, I applied sulphur, but apparently with no good effect. No doubt the root is first attacked. I have had them attacked by mildew before, and always found sulphur a specific.—P. J. N. [The decay arises from the heat and drought affecting the plants, aggravated in all probability by their being in stiff and sour ground. In dry, hot localities Violas and Pansies are apt to go off in this way during summer.—R. D.]

Blight on Apple Trees.—C. F. C.—The Apple leaves received are injured by an aphis, and I have no doubt that the aphis might be destroyed by using the well-known ordinary means of killing the green fly. When injury of this kind becomes extensive its cure is troublesome, and takes up much time. It is during the early stages of the growth of the insect that great care should be taken to stop any advance. "A stitch in time saves nine" is here well exemplified.—W. W.

Names of Plants.—*Col. P.*—Pavia macrostachys, a middle-sized, deciduous tree, belonging to the Natural Order Sapindaceæ, and distinguished from the Horse Chestnuts by having a smooth (not prickly) capsule. *C. R.*—1, Thuja gigantea; 2, Thujopsis borealis; 3, Cupressus Lawsoniana; 4 (next week). *H. J. R.*—The blue flower is a Gentian of some kind, but which it is we cannot say from the very poor specimen sent; the Stonecrop cannot possibly be named from such a flower as the one sent; leaves as well as flowers should be forwarded if possible. *A. P.*—Flower much withered, but apparently Epipactis palustris. *H. C. S.*—Betonica grandiflora; a species of Salvia, of no particular value; and Papaver alpinum. *H. B.*—A dwarf species of Epilobium, which we might be able to identify with the aid of complete specimens; we presume it was truly wild in the locality in which you found it? *R. T. H.*—Williams, of Holloway. *J. D.*—Bignonia Cherere, a very fine flower—some, that it may be an improved variety or nearly allied species. *J. P., Switzerland.*—1. Cystopteris fragilis dentata. 2. Cryptogramma crispa. 3. Polypodium Phegopteris. 4: Cystopteris Regia.

Peach Stump the World.—As I have not noticed an answer to Mr. Henderson's question (see p. 48) respecting this fine Peach, I think it cannot be so generally grown as it deserves to be. In the autumn of 1874 we received from Messrs. Veitch & Sons a healthy young tree of this variety. It was sent as a substitute for another, and was recommended as an American kind which would be sure to give satisfaction. We have it in an unheated house, where it closely follows Stirling Castle in ripening. It has a good constitution, grows freely, and its fruit, as Mr. Henderson says, is large and handsome. We have now a full crop of what promises to be very fine fruit. It is one of the best of its season, and is excellent both for table and exhibition.—Thos. Coombes.

Culture of Todea superba.—I have a very fine plant of this, but for the last three months the tips of the fronds are turning brown. What is the cause and remedy? I keep it carefully shaded from the sun, and water it daily.—R. A. [Want of air is generally the cause of the tips of the fronds of Todea superba turning brown. When the plant is kept too confined the water which it is necessary to give it overcharges the air with moisture, which condenses and falls back on the plant, causing the injury. Nothing is worse for plants of any kind than moisture so obtained. Alternations between a moist and a dry state of the air around the plant will also cause the Todea fronds to turn brown. "R. A." had better cover the stem of his Todea all over with living Sphagnum Moss. Water copiously with rain water. Place it where it will get plenty of light and as little heat as possible; a temperature of 45° is enough for the winter.—J. O'B.]

Diseased Cucumbers.—I have sent two or three small Cucumbers which go off yellow at the points and come to nothing. They are grown on the roof of a Cucumber house, to which air can be given at the top, but not at the sides. I may add that I have lost quite one-half of the crop from the failure in question. I have sufficient fire-heat at command, and I can give plenty of bottom-heat. I also send leaves of the younger and older foliage. Abundance of water is given them three times per week.—J. W. [The leaves, which are very thin, have apparently been attacked by red spider. Maintain a moist atmosphere in the house, give more air, shade during bright sunshine, and stop the points of the shoots at one joint beyond the fruit as soon as the latter is set.—S.]

Plants for Wardian Cases.—What are the best dozen plants or so for a case 3 ft. long and 20 in. wide?—E. F. [The name Wardian case is not applicable to the present plant cases. They are more properly miniature portable conservatories. In our Albert plant case we put Ferns, Aspidistras, small Palms, and, to give a little colour in season, Caladiums and ornamental-foliaged Begonias. Small, well-coloured plants of Dracænas look well. We clothe the surface with Lycopodium denticulatum, green or variegated. As to the number of plants, this is quite a matter of opinion. We put as many in as the case will hold. Some people will put as few in as they can, but then the difference is simply a richly or meagrely furnished case.—B. S.]

Fruitless Pines.—I have a number of Pines in 10-in. and 12-in pots which, unfortunately, have failed to show fruit this year. They are large healthy plants, and no doubt the pots must be well filled with roots. In order to successfully fruit them next year, should I keep them in the pots they are in without disturbing them in any way? or should I take the tops off and treat them as suckers, of course discarding the old roots?—Enquirer. [Do not by any means disturb the Pine plants, but remove part of the surface soil and strip off a few bottom leaves; top-dress them with fresh soil and plunge the pots up to the rims into bottom-heat from 80° to 85°; surface temperature of 90° to 95° through the day. If very dry a good watering once a week. I have always found the above method successful in starting old Pine plants.—D. M.]

Questions.

Veitch's Autumn Giant Cauliflower.—Is it usual for Veitch's Autumn Giant Cauliflower to produce purple heads? At present mine are so coming at the rate of three to one, and for the purpose intended they are useless.—T. C.

Scott's Favourite Lettuce.—I should like to know whether Scott's Favourite Cabbage Lettuce is black or white-seeded. Last year the seed sent was black, and I had splendid Lettuces through the hot weather, but this season the seed supplied for it was white and the produce worthless, inasmuch as the plants "bolted" before they folded.—T. C.

Light-coloured Evergreen Shrubs.—I want two or three good foliaged and flowering evergreen shrubs of a light tint of foliage. In looking through the evergreens I find them to be nearly all of a dark shade, except, perhaps, some of the Rhododendrons and a tall Hypericum; Kalmia latifolia, if I mistake not, is moderately light in shade; Andromeda and Skimmia are of medium green or olive shades, but few are really of a light shade. If any of your readers can name a few I shall be obliged.—John Stevens.

Winter Flowers.—I have a small greenhouse heated by a flue which I can keep up to from 55° to 65° at night during winter, and I wish to devote it principally to growing flowers for cutting to supply the church vases through the winter. The flowers must be white and different shades of scarlet and crimson, those which last longest in water after being cut being preferred. Would any of your readers kindly tell me the best sorts (not expensive) to grow?—G. S. M.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

August 6.

The principal feature at this meeting was Begonias, of which there were numerous large groups. A large collection of Gladioli from Messrs. Kelway, Langport, a collection of insectivorous and other plants from Messrs. Veitch & Sons, and stands of brilliant Verbenas from Mr. Cannell, Swanley, added greatly to the attractions of the meeting.

First-class Certificates were awarded to—

Gladiolus Telamon (Kelway & Son).—A finely-formed flower, with bright pink, purple-striped petals and creamy-yellow throat.

G. Gorgonius (Kelway & Son).—A kind with remarkably well-formed spikes and unusually large and perfect blossoms of a pinkish-red colour, striped and spotted with dark crimson and purple. Well worth adding to any good collection.

G. Herois (Kelway & Son).—A kind with perfect spike and flowers of a pinkish-scarlet colour with creamy-white throat.

Begonia Mrs. Dr. Todd (Laing).—A kind having a good habit and brilliant crimson wax-like flowers produced in great profusion.

B. Chiswick Blush (Society's Gardens).—A dwarf-habited kind with slender flower-stalks and large trusses of medium-sized, blush flowers. A capital sort for baskets.

Botanical Commendations were awarded to—

Torenia Bailloni (Veitch & Sons).—A dwarf yellow-flowered form of a well-known plant, and one likely to prove as useful in gardens as T. Fournieri, when the best conditions of its culture are known. The reason why such a plant should be put aside with a botanical certificate is not easily understood.

Dendrobium d'Albertisi (B. S. Williams).—A small-flowered kind, a full description of which was given in The Garden (see p. 55).

Gold Medals were awarded as follows:—To Messrs. Veitch & Sons for groups of Pitcher-plants and Begonias; to Messrs. Kelway & Son for Gladioli; and to Messrs. Laing & Co. for group of Begonias.

Silver Medals were awarded to Messrs. Hooper for Begonias and Gloxinias; and to Mr. B. S. Williams for group of fine-leaved plants.

The collection of insectivorous plants from Messrs. Veitch & Sons attracted much notice on account of their curious construction and interesting character. They ranged from the miniature Dionæas and Cephalotuses to the noble Nepenthes Hookeri and Rafflesiana and the trumpet-leaved Sarracenia Drummondi.

Mr. B. S. Williams exhibited a miscellaneous collection of fine foliaged and flowering plants, among which were particularly noticeable Caladium La Perle de Bresil and C. hybridum, the latter a curious-leaved kind, the result of a cross between a Caladium and an Alocasia. The fine new Fern Microlepia hirta cristata was also shown; likewise several fine-leaved Crotons, Dracænas, and Coleuses, the latter being very bright and distinct.

Verbenas from Mr. Cannell were distinct in character, large, and of fine colours. Among the most striking kinds were Lady of Lorne, with remarkably large flowers, resembling those of a white Phlox; Lord Leigh, brilliant scarlet, clear white eye; Swanley Gem, white, edged with lavender; Purple Emperor, rich dark purple, distinct white eye; Nemesis, dark crimson; and La Lovie, mauve. Mr. Cannell also sent a box of blooms of Pelargonium Echinatum Spotted Gem, which were bright in colour and very effective. Striped Vesuvius Pelargonium was likewise contained in the same collection.

Gladioli.—These, from Messrs. Kelway, Langport, consisted of forty-eight varieties, a large number of which were seedlings, and fine both in colour, size, and form of bloom. Among the most attractive kinds already in commerce were Sir Thomas Symmonds, a rose and crimson-striped flower with well-formed petals; Acantha, a showy kind, white, and striped with bright purplish-rose; Faust, brilliant orange-scarlet with purple veins; and Eclât, bright scarlet and white throat. Among the best seedlings were Herois, Gorgonius, and Telamon, to which reference has already been made. Other kinds worthy of notice were Damocles, fine purplish-crimson with white claret-striped throat; and Gabinius, very large white flowers delicately tinted with pink, the lower petal being blotched with bright purple. Mr. Bates is a kind with silky, white flowers, and bright purple throat and lip, very showy and distinct.

Gloxinias from Messrs. Hooper & Co., Covent Garden, which had been raised from seed sown one year ago, were remarkable for their size and profusion of bloom, considering the age of the plants. The flowers were large and varied, some of the kinds being well worth naming.

Begonias.—These were chiefly shown by Messrs. Laing & Co., Messrs. Frœbel, and from the Society's garden. The first-named exhibitors' plants were chiefly seedlings, the result of careful crossing with the best kinds. The flowers throughout were of fine form and colour. A good white-flowered kind of the Pearcei type was Mrs. H. J. Elwes, and there were several kinds with flowers almost golden-yellow. We also noticed in this group a plant of Begonia diversifolia, a kind not much grown, but one of the most beautiful. It grows from 2 ft. to 3 ft. high, and bears rich rosy flowers all the way up the stems. The plants exhibited, which were in 6-in. pots, were the produce of seed sown on Jan. 24 of this year, and served to show how quickly good decorative plants may be obtained. The best kinds in Messrs. Frœbel's group were Moonlight, White Queen, Solfatara (sulphur), Gloire de Nancy (double scarlet), Feu de Joie (round flower, brilliant rose), Eldorado (yellow), and Corneille (clear rose). In Messrs. Veitch's group of Begonias were the brilliant crimson Mrs. Charles Scorer, B. Veitchi, Queen of the Whites, and several good seedlings; also the dwarf, scarlet-flowered B. Davisi and a kind of similar habit of growth, named Mrs. Arthur Potts, having deep blood-red blossoms.

Miscellaneous Subjects.—Mr. Dean sent a dwarf kind of Pyrethrum Golden Feather, which is likely to prove useful in "carpet bedding," requiring evidently much less trouble to keep at the desired height than the one in general cultivation. Mr. Osborn, gardener to F. Buchan, Esq., Southampton, showed a flowering plant of Odontoglossum Lindeni, being the first that has flowered in this country. Its blossoms are of a lemon colour, and, as a variety, it is doubtless an acquisition. A group of small plants of Hydrangea paniculata grandiflora, from Messrs. Veitch & Sons, was very showy.

Fruit and Vegetables.—Mr. Thomson, of The Vineyards, Clovenfords, sent a bunch of Duke of Buccleuch Grape of large size and noble appearance, both in bunch and berry. Several Melons of no particular value were also shown by other exhibitors. A collection of Potatoes was shown by Mr. Ford, gardener to E. Hubbard, Esq., Leonard's Lee, among which the most noticeable kinds were International Kidney, Fenn's Bountiful, Yorkshire Hero, Snowflake, and Rector of Woodstock.

During the afternoon Mr. Jennings, the assistant-secretary, gave a lecture on "Tuberous-rooted Begonias," in which he alluded to their form, seeding qualities, conditions for their successful culture, and their value for baskets and general decorative purposes.

Public Park at Wigan.—Mr. N. Eckersley, High Sheriff of Lancashire, has just opened the first public park in the borough of Wigan. Many thousands of persons witnessed the ceremony. The greater portion of the land was given to the town by Mr. Eckersley, who purchased it from the rector and patron for £2000, and the grounds have been laid out by the Corporation from designs by Mr. Maclean, of Derby. The park is nearly 30 acres in extent, and is centrally situated.

Scottish Horticultural Association.—At the monthly meeting of this Association, held on Tuesday last, Mr. Alexander Honeyman read an instructive paper on "The Nutrition of Plants." Mr. William Black next read a paper on "The Cultivation of the East Lothian, Warriston, and Ten-Week Stocks." He described the modes of cultivation followed in the Dean Cemetery, where these Stocks grow so luxuriantly. Messrs. Dicksons & Co. received a certificate for the new Phlox Surprise, and Mr. Robert Robertson received certificates for new Carnations Rosy Queen and Mrs. Robertson.

Fremontia californica.—On the outside walls of glass houses in the Coombe Wood Nursery about the end of June this was covered with bright yellow flowers and good foliage, not unlike small Fig leaves. In habit it has more the character of a dwarf bush than of a wall plant, and would make a conspicuous object in positions where it could receive a little protection during severe winters. As a wall plant it would be very effective in contrast with Clematises and similar summer-flowering plants used for wall gardening.—J. Groom.

Scottish Arboricultural Society.—The first excursion of the members of the Scottish Arboricultural Society took place a few days ago. The party proceeded by train to Scone Station, and during the day visited the plantations of Scone and Lyndoch, on the estate of the Earl of Mansfield, Mr. W. M'Corquodale, forester and wood surveyor, acting as conductor. The members were accompanied by their photographic artists, who carried home with them souvenirs of the excursion.

Excursion to Brighton.—On Friday, Aug. 2, the *employes* of Messrs. Sutton & Sons, the Queen's seedsmen, with their wives and friends, and accompanied by the members of the firm and their families, numbering in all between 300 and 400, had their annual excursion to Brighton.

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"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

ENGLISH AND FOREIGN BOUQUET-MAKING.

Allusion is made (p. 101) to the comparative merits of French and English bouquets. Although willing to admit that in the matter of arrangement our London artistes may claim a superiority over their Continental colleagues, yet I cannot help thinking that in some respects we in this country might profitably take a leaf from their book. The system in this country of placing as many choice or other flowers as possible in a bouquet is a bar to many who cannot afford the outlay which the purchase of any great quantity of them entails. It is just in this respect that Continental people—especially in Germany—excel, they having the knack of making attractive bouquets without using so many flowers. In the middle of winter it is impossible for the many to indulge in a bunch of flowers; our nurserymen and florists profess not to be able to make anything of a cheap description at that time of the year. But in Germany this is just the time when a large trade is done in cheap bouquets, which they are there enabled to make by a judicious employment of flowers and foliage. Of course in a shilling bouquet at Christmas one would not expect to see Camellias or Roses, but there are plenty of flowers which, sparingly used, will suffice. As an instance, I will briefly describe one method which I have not seen employed in England. Some green Moss is procured, tolerably long, so that it may be made up into little bunches, which are attached, by means of strong thread, to some sprigs of anything of a pliable nature, such as Spanish Broom, and two or three short sprays of the small Periwinkle are attached in the same manner. The flowers, consisting of anything that can be procured, are mounted in the usual way, only that there will be but little need to wire them, just tying on being sufficient. A neat deal stick is taken and the centre flowers affixed to the end of it; next to this is placed a row of the Periwinkle, and around this a row of the little Moss bundles; then again come flowers, and then again Moss and Periwinkle, or the latter may be worked in amongst the rings of flowers. The whole is edged with some Thuja sprigs, or something of a like character. In this way the flowers are spread over a greater surface, and it is possible to make a fair-sized nosegay at a cheap rate. In these cheap bouquets such plants as Gypsophila, Ammobium, and Helichrysum, dried in their natural colours, are mixed with the natural flowers; and as most nurserymen make a practice of growing and drying a quantity of these plants, they can be plentifully used. Were it understood that a good shilling bunch of flowers could be had in January as well as in June, buyers would greatly increase; and, as it is the cheap article that pays the best, makers would soon find their production profitable. J. Cornhill.

DINNER-TABLE DECORATIONS.

My impression concerning these is that even making a good custom assume unreasonable proportions may soon not only render it objectionable, but a positive nuisance. This does not, however, apply to a few flowers being placed on the table. I see, indeed, no reason why flowers should be considered "out of place" on a dinner-table; but the question is, How can we improve such decorations? for it is impossible to fix rules for such work. It is true some good general principles may be laid down, such as not obstructing free intercourse across the table, and leaving ample margin for plates, glasses, &c.; but if any set of rules were implicitly followed table decorations would soon be reduced to a very stereotyped affair indeed; if the operator does not possess originality enough to extemporise a design by means of which he can work harmoniously with surrounding objects, I should have but little hopes of a successful result from following any set of fixed rules. As dinner-table decorations are usually seen only by artificial light, it follows that the candelabra or whatever mode of lighting is adopted will, in a great measure, determine the form and extent of the floral decorations. Presentation plate, prize cups, and similar silver services often well-nigh fill the centre of the table, and leave only a small margin for flowers and foliage. An ornamental dessert service, too, skilfully filled and garnished, has a very pretty effect, and since the flat form of decoration has become so popular, a design on the white cloth, or on a centre of coloured silk or satin, is very speedily arranged in Fern fronds or ornamental foliage, and a few brightly coloured or graceful forms of flowers are added merely to give life to the arrangement. A few trailing sprays of foliage and pendant blossoms may also drape lightly from the candelabra, and there should be a specimen glass to each guest, containing a choice button-hole bouquet. Surely such decorations as these cannot, with justice, be termed incongruous. The principal evil to be guarded against is overcrowding. If ample space be allotted to each guest for all the necessary adjuncts of a dinner-table, I see no reason why the central portion, not required for any useful purpose, should not be gay with flowers. I would, however, encourage, as much as possible, originality of design. If A delights in fountains, waterfalls, and water bouquets, why should not B enjoy his Ferns or Mosses, or C only display his choicest fruits? Whether in the castle or the cottage there is room for endless variety in the way of table decoration, and the best effects will, as a rule, be obtained not by copying others, but by originating designs to suit special occasions as they arise. J. Groom.

EXHIBITION CARNATIONS AND PICOTEES.

As a grower and exhibitor of these flowers I cannot permit the criticisms in The Garden (see pp. 106 and 142) to pass without remark. It is evident that none of the writers in question grow Carnations themselves, and it is equally plain to those conversant with these flowers that the said writers have but little knowledge of the way in which they are prepared for exhibition. It is a misleading remark to say, for instance, that the flowers "are throttled by a stiff collar of dead white cardboard," placed there, as is further stated, "to prevent the effect of the bursting of the calyx." It is wrong to say that the flowers are "throttled," as the card has a hole in the centre sufficiently large to prevent its coming in contact with the calyx, a fact which disposes at once of the statement that the card is put there either to prevent the bursting of it, as some suppose, or to mitigate the effect of its bursting, as stated by others. I think I can show, too, that The Garden is responsible for some crude remarks on dressing. "What we have to deplore," says a writer in that journal, "is the fact that, after ages of effort, and not a little vaunting of what has been done, the ideal flower is only to be seen in a deep paper collar, with all its delicate beauty of varied petal destroyed, flattened, or picked out." This statement is altogether at variance with the intentions of the florist. His aim is to improve the appearance of the flower, to assist Nature, he would say, which he does by bringing out the "varied beauty of the petal," not destroying it. Some flowers have been brought to such a high degree of perfection that they do not require any artificial aid, either in the way of card or tweezers. Others are much improved by having some of the petals slightly moved aside in order to show the varied beauty of those that are hid underneath. In a large collection many flowers occur in which the outer petals are quite hid, owing to the inner ones overlapping them; in other flowers the petals are heaped together, as it were in segments, and therefore, by simply moving these to the right or to the left, their beauty is set forth. Again, in my opinion, such flowers are all set off to better advantage with cards than without them; in many cases, indeed, their aid is almost indispensable. Let a stand of blooms be set up without cards and one with them, and leave the flower-loving public to judge the two stands; I am certain that by far the larger proportion would select the carded flowers. That there might be some alteration in the way of exhibiting them I will admit. The monotony connected with the long lines of boxes certainly affords room for complaint, and the same may be urged against long lines of Dahlia boxes, or even of Roses. Groups of small fine-foliaged plants, including Ferns, might be introduced in some way between the different sections of flowers, and the stages might be fringed with a row of Creeping Jenny, Isolepis, or Selaginella. To any external adornment of this kind no florist would object. What they want at a Carnation exhibition is to study the flowers in all their points of excellence, to admire the regularity and brightness of marking in the Carnation and the pure ivory-white petal, edged with red, purple, rose, or scarlet, in the Picotee. Few of them care much about the way in which they are arranged. Still, I would do florists injustice did I say that they would not appreciate a better arrangement. Let us now advert to the remarks of "A. D." (see p. 142). What can the general reader think of a writer who describes a plain circular card as "the meretricious aid of an ornamental decoration?" I trust, also, that "A. D." will see that, by implication, he accuses certain judges of dishonesty. It would have been better to say in the place of "an honest judge," &c., judges should disqualify, &c. The weakness of "A. D.'s" remarks culminates, however, when he says dressing "too often enables a skilled expert to make good flowers out of bad ones." Critics like "A. D." often rush into print without having studied the subject about which they write. Let us take an illustration. Let us suppose that a person having no knowledge of the art of painting visits a picture gallery for the first time. He walks carelessly through the rooms, and the less he knows of pictures the more freely and loudly will he express his opinions of what he considers the best, and it is also very unlikely that he will select as the best those paintings marked with the stamp of genius; rather will he choose those where high colour and showiness obtain. It is so, too, with the study of sculpture, and it is the same with florist flowers. The showy border Polyanthus is preferred at first to the delicate refinement of the gold-laced flowers, and the gaudy colours of the self-edged Alpine Auricula to the matchless purity of Taylor's Glory or Smiling Beauty.

J. Douglas.

SPECIES OF SABBATIA.

Of this lovely genus of the Gentian family we have at present three species in cultivation, all natives of North America; and, though over half a century has elapsed since they were first known, they are but rarely met with in gardens. The kinds are—The Field Sabbatia (S. campestris), an erect-growing plant about 1 ft. high with many-branched, angular stems, which form a broad head. The leaves are stem-clasping and oval-shaped, pointed, and with from three to five veins. The blossoms are borne at the tips of numerous short stalks, and are about 1 in. across, with five oblong divisions. The colour is a light rose with a greenish star in the centre. It inhabits the open prairies of the Arkansas and Red Rivers. The Chloralike Sabbatia (S. chloroides), the finest of the genus, is rather a weak-growing kind, about 1 ft. high, with lance-shaped, erect leaves. The flowers are not borne in such profusion as in the preceding, but are much larger, being from 1½ in. to 2 in. across, with from seven to thirteen divisions, and of a bright rose colour. It is found in boggy places from New York to Carolina. It was introduced in 1817. The angular-stemmed Sabbatia (S. angularis) is of erect habit, with oval, stem-clasping leaves. The blossoms are of a purplish-red colour, about 1 in. across, and are borne on short stalks in profusion, which form a broad, fan-shaped head. It inhabits the hilly shady woods from Canada to Carolina, and was introduced in 1826. The variety S. angularis alba has pure white blossoms, and is also at present in cultivation. They are not difficult to manage, provided the peculiar habitat of each species be imitated as nearly as possible. For instance, S. chloroides, being found in bogs, requires a very moist position; S. campestris, an open and drier place; S. angularis, a more sheltered situation and more shade than the others, and it must also have partial shade in imitation of that afforded by the surrounding vegetation amongst which it is found growing in a wild state. The soil I use consists of equal parts of good fibry loam and finely sifted leaf-mould, with enough sand to make it open. The only means of propagation I find is by seeds, which should be sown now, as no advantage is achieved by sowing in spring, the seedlings being apt to become drawn during hot weather; whereas, if sown now, the seeds soon germinate and attain a fair size before winter. The seedlings should be potted off before they become in the least drawn, or they will make but weakly plants, and should be wintered in a cold, airy frame. In spring, repeatedly stopping the shoots will induce them to form bushy plants before flowering. All the above kinds are but of biennial duration, but as they can be raised so plentifully from seeds, it would always be a source of perennial enjoyment to have a succession of flowering plants. There are several other hardy species which, I believe, are not in cultivation at present, including one or two perennials. They all have either rose or white coloured blossoms, with the same style of habit as those enumerated. The best are S. paniculata, calycosa, stellaris, and gracilis. W.

Bamboos for the Conservatory.—When well grown in pots the smaller Bamboos make admirable subjects for the conservatory or greenhouse, or for standing in recesses in rooms they may be used with advantage. Sprays of their glossy green foliage are also among the best material which can be used in large vases of cut flowers, or for edgings of bouquets. We lately noticed a collection of Bamboos in pots in Mr. George Paul's nursery at Cheshunt. The kinds most favoured are Bambusa glauca, B. mitis, the true B. nigra, and B. arundinacea.—S.

Flowering of Odontoglossum Lindeni.—Referring to your notice of the Odontoglossum Lindeni which I exhibited at the Horticultural Society the other day, and which has never before flowered in England, permit me to say, for the information of your readers who may have a similar plant in their collections, that I purchased it at Messrs. Stevens' about six years ago, and that it was kept in a temperature the same as that in which Cattleyas and Vandas are kept for four years. Finding, however, that it did not bloom, I had it two years ago placed with Oncidiums and Odontoglossums, and subjected it to a very low temperature, my house not exceeding 55° all last winter, and since the early part of May no fire-heat whatever has been applied. I think this proves it to be a specially cool Orchid, and I make no doubt that if so treated it would push up a flower-spike every year.—H. J. Buchan, *Wilton House, Southampton.*

Myrtles at Lochryan.—These grow to a larger size as standard shrubs at Lochryan, Wigtonshire, the seat of Sir William Wallace, Bart., than I have ever seen in this country. Some of the bushes are over 10 ft. high and as much through, the foliage most vigorous and healthy, and the whole plants thickly covered with flower-buds just bursting into bloom. The Myrtle is common all through the sea-coast gardens of Great Britain as a wall shrub, but it is only where it is planted as freely as Rhododendrons that its full beauty can be seen. There are also several fine specimens, about 25 ft. high, of Acacia dealbata, which it is unusual to see so far north.—Salmoniceps.

Plants for Churchyards.—I notice in the papers mention of another churchyard to be planted, and it is likely to be followed by many more. It has therefore struck me as worth considering whether shrubs which are sure to grow large are suitable for the purpose. I imagine that even the Lilac will produce roots sufficiently strong to disturb the graves; and I see in Kensington Churchyard many shrubs which, if left there, will, after a lapse of twenty years, smother the whole place. I would suggest that, except there happen to be spaces quite away from graves, the decoration by plants should be confined to such as the Broom, the Box, and a few others of slow growth, and that there are plenty of other tall-growing plants (including the Pampas Grass) which may be trusted not to grow in the way of roots to any troublesome extent. Between the graves the Campanula pulla would be an excellent subject, as it is so hardy in London; in shady places I would put Fumaria.—J. S.

Second Growth in Lilium longiflorum.—I have a bulb of this Lily which sent up two stems in the spring in the ordinary way, neither of which, however, bore any bloom. Thinking that I should have to wait till next year, I put the pot aside for a time, till some time afterwards, perhaps in June, I observed four new stems rising from the bulb. These stems are now about 8 in. high, and I am told that they are all likely to bloom, and, indeed, I think I can feel the buds at the top of the stems. May I ask if it is not unusual for this or any other Lily to make a double growth, as it were, in one season?—W. J. T., *Brixton.*

NOTES OF THE WEEK.

The White Irish Heath (Menziesia polifolia alba).—I saw this growing most vigorously at Woodlawn, Castlewellan, forming tufts, fully 4 ft. in diameter, which were sheets of white flowers. It is planted in the hard gravel soil of the garden.—T. Smith.

Desfontainea spinosa.—I saw some beautiful bushes of this handsome shrub, fully 4 ft. high and proportionately wide, literally loaded with flowers, in the gardens of Earl Annersley, Castlewellan, Co. Down. They were formerly grown in pots, but have been planted out in the open ground for some years, to their advantage in every way. They had evidently flowered equally well last year, as a large number of seed-pods were upon them; but all I examined were seedless, probably owing to last season being cold and sunless, and consequently fertilisation imperfect.—T. Smith.

Harrison's Musk.—This will hereafter have to be classed with yellow bedding plants. I saw the other day a beautiful bed of it in the gardens of Narrowater Castle, Co. Down. The beds are all raised slightly above the level, and the ground is very stony and dry and exposed to the sea breezes. It had not been watered since planted in May last, and has grown well from the first, it being the first plant to cover the ground, forming a sheet of yellow, with the leaves beautifully green and healthy. This very much surprised me, as I thought it would not do without abundance of water. It was likewise used as a basket plant in the conservatory, and for this purpose also it was quite charming.—T. Smith.

Delphinium cardinale.—Specimens of this Delphinium are now finely in flower in the Royal Botanic Garden, Edinburgh, and at this season of the year few plants are more imposing. They vary from 3 ft. to 5 ft. in height; one specimen 4 ft. high and 40 in. in circumference contains sixty branchlets, each bearing on an average from six to eight flowers of a bright orange-red colour, forming a strong contrast with plants of Delphinium grandiflorum album that stand in close proximity to it. D. cardinale is quite distinct from D. nudicaule, and will make a grand plant for the wild garden.

Plants in Bloom at Tottenham.—Amongst hardy plants now in bloom at Tottenham are the rare and beautiful Pentstemon Cobæa; varieties of the handsome Sparaxis pulcherrima; many plants of the new Lily alluded to above; a handsome and singular Stobæa, which is quite hardy and very distinct; a fine Japanese herbaceous Veronica; the hardy dwarf form of the common Agapanthus; Campanula Vidalli; Spiræa palmata elegans, not a hybrid at all, but a pretty plant if allowed to stand on its own merits; it is probably what used to be called S. lobata, or a form of it. Along with these was also the showy Chrysanthemum lacustre, of which we have lost sight for some time, and which is a perennial well worthy of culture; in fact, it is a vigorous and fine ox-eye Daisy. Added to the above were likewise Ramanas Roses, in three colours; the large ouble Day Lily, the double Tiger, and other beautiful Lilies.

Double-flowered Bramble.—One of the finest and most suitable of flowering shrubs for the wild garden or woodland border is a double form of one of our commonest native Brambles—Rubus discolor fl.-pl. A large specimen in the Kew collection has been one mass of rosy-pink blossoms for some time past, numbers of the individual flowers being as large and as perfectly double as those of many Pompon Chrysanthemums. This kind will flourish in almost every soil and situation, and, in the mixed shrubbery border, will furnish for several weeks a colour which is, at any rate, somewhat uncommon among shrubs. Another Bramble, Rubus laciniatus, has beautiful, somewhat Parsley-like leaves, and fruits very freely. Like the last, it will grow anywhere, but it is well worth a place in the kitchen garden, and it will well repay liberal treatment.—†

Loasa volcanica.—In the herbaceous collection at Kew there is now in flower this new and beautiful plant, recently figured in "L'Illustration Horticole." It is a robust-growing annual, about 3 ft. in height, with dark green, three-lobed, toothed leaves. The blossoms are borne in profusion and are about 1½ in. across, with five divisions, which form a regular pentagon. The colour is very peculiar; on the outside are the bright green calyx lobes, half as long and alternate with the boat-shaped petals, which are pure white, inside of which lie the yellow stamens. In the centre are five small, two-horned petals, united in a button-like form, which on the surface are of a bright scarlet, marked by transverse white lines, and golden-yellow at the edges and sides. Altogether, it forms a very striking object. The detractive points are that it is beset with numerous stinging hairs, which produce the same effect as a Nettle, and also its being but of annual duration. It is, we believe, one of the many discoveries of Mr. Wallis in New Granada.—A.

Seedling Petunias.—We have received from Mr. Marcham, Springfield Nursery, Isleworth, a boxful of seedling Petunias. They consist of selfs of the richest crimson, rosy-purple, and white; white grounds, flaked with crimson and purple; crimsons, flaked with white; and rosy-purples, with a white centre running with heart-shaped terminations into the coloured margins—altogether, very striking flowers.

The Paris Exhibition.—Among the artizan reporters selected by the Society of Arts to examine and report on the various industries at the Paris Exhibition we learn that Mr. George Stanton, gardener to Mr. Noble, Park Place, Henley-on-Thames, has been appointed to report on horticulture. Mr. Stanton was selected by the above-mentioned Society for the same purpose also at the Paris Exhibition in 1867.

Aerides Lobbi var. Ainsworthi.—A plant of this fine form of A. Lobbi, exhibited by Mr. Mitchell, gardener to Dr. Ainsworth, Manchester, at the Royal Horticultural Society's recent show at Preston, deserves more than a passing notice on account of its finely-developed and beautifully-coloured flowers. It was a medium-sized specimen, consisting of two growths, each furnished with about sixteen leaves. One growth bore two flower-spikes, the longest of which measured 28 in., and had three side branches; the others were very little shorter, and the flowers were equally well coloured.—T. B.

A Few Stately Plants.—The present season has produced a degree of development rarely seen in hardy plants; they grew away in the spring without any checks from late frosts, such as we often have. Aconitum Stokesianum has grown 8 ft. high; Bocconia japonica, 7 ft. to 8 ft., exceedingly fine; Eryngium paniculatum, 6 ft. high, most ornamental; Hemerocallis quanso fl.-pl., in large masses, fully 4 ft. high, and with hundreds of flowers; Silphium gummiferum and S. laciniatum, 5 ft. to 6 ft. high, the former with deep yellow and the latter with paler-coloured flowers; one of the best features of these plants is that they are continuous-blooming, like the Dahlia.—T. Smith.

A New Cattleya.—One of the most gorgeously-flowered hybrid Cattleyas that has yet been raised may now be seen in flower in Messrs. Veitch's nursery, Chelsea. Mr. Dominy believes that it is the result of a cross between C. Dowiana and C. exoniensis. It is a strong grower, and its flowers are of large size; the lip, which is of a rich velvety maroon shaded with purple, measures from 2½ in. to 3 in. across, and forms a striking contrast to the broad, delicate violet, transparent petals and sepals. Although Cattleyas are not so popular as Odontoglossums and other cool Orchids, owing to their requiring more heat and care to grow them, yet such kinds as the one just alluded to fully repay, by the remarkable splendour of their blossoms, any care or trouble which may be bestowed upon them.

Gardening in the Green Park.—We notice a great improvement in the Green Park by Piccadilly, owing to the suppression of a number of the ugly and monotonous beds which were placed by that thoroughfare. The trees have also been thinned, and the remaining ones look much more healthy and promising.—V.

A Highly-coloured Masdevallia.—A medium-sized plant of Masdevallia Harryana, designated, I believe, the Drumlanrig variety, shown by Messrs. Veitch at the late horticultural exhibition held at Preston, exemplified more fully than usual the great variety in colour that exists amongst these plants. The peculiar shades in Masdevallia blooms are almost as difficult to describe as they are to paint, but we have hitherto seen nothing to equal the depth and intensity of colour in the plant alluded to, which may be described as a vivid magenta-crimson, unequalled by the flowers of any plant we have ever met with.—T. B.

Lilium Batemanniæ.—We have received permission from a well-known lover of Lilies, Mrs. Bateman, to name a fine autumn-flowering Lily from Japan Lilium Batemanniæ. We first had it over three years ago and flowered it, but, owing to the weakness of the specimens, were then unable with certainty to bring it forward as something really new. This year, however, having obtained larger plants, we can now with confidence introduce it as hitherto unnoticed in England. It grows from 3½ ft. to 4 ft. high, and has a slender stem, light green, inclined to bronze at the insertions of the lower leaves. The latter are long and slender and arch downwards. The flowers are semi-cup-shaped, with spreading segments, somewhat recurved, medium sized, of a deep apricot tint, and unspotted. They are produced in umbels of from four to eight or twelve, not unlike in tint those of Thunbergianum venustum; but the plant, as to bulb, habit of growth, foliage, and time of flowering, resembles very closely L. Leichtlini, to which it is closely allied.—A. Wallace, *Colchester.* [We have received fine specimens of the same Lily from Mr. Ware's collection under the name of a variety of L. Thunbergianum. Mr. A. Perry considers it a tall form of what is known as the Armenian variety of Thunbergianum.]

NOTES FROM KEW.

Hardy Shrubs.—Foremost in beauty among the hardy shrubs now in flower are several species of the North American genus Clethra. All have deciduous, somewhat Alder-like leaves, and terminal racemes of white, Andromeda-like flowers; C. acuminata, C. paniculata, and C. Michauxi are well worthy of a place in any peat border.

Hardy Herbaceous Plants.—Zephyranthes Lindleyana, from Mexico, with its Grassy leaves and erect, funnel-shaped blossoms, pure white inside and tinged with red on the outer surface, is one of the most handsome of the hardy Amaryllids. Gladiolus dracocephalus, a kind first discovered at the foot of the Drachenberg Mountains, in Natal Colony, by Mr. Cooper, when collecting for Mr. W. W. Saunders, is, according to Sir Joseph Hooker, remarkable for the contrast it affords in the lurid hue of its flowers, which are wholly unlike those of any of its congeners known to him. The upper parts of the flower have a yellowish ground colour, closely and finely striped with dull red-purple; the lower portions are bright green spotted with purple. Clematis Davidiana, though somewhat similar to C. tubulosa, is, however, totally distinct from that species from a horticultural standpoint, and, according to the same standard, a much more desirable plant in every way. It was a few years ago brought to the Paris Jardin des Plantes from China. In dry, sunny spots few annuals make such a gorgeous show as the Portulacas, P. Thellussoni, with its large, rosy-crimson, white-centred blossoms, being one of the best. Hypericum empetrifolium is a beautiful plant, and a near ally of the lovely little H. Coris, noted some weeks ago. It grows less than 1 ft. high, has pretty, Heath-like foliage, and loose panicles of bright yellow flowers. Malvastrum Munroanum, from Columbia, although introduced to English gardens more than half a century ago, seems to have been long almost lost sight of. It is, however, a very handsome perennial, bearing an abundance of bright salmon-coloured flowers. M. lateritium, from Buenos Ayres, has large, salmon-coloured, saucer-shaped flowers on stalks, 3 in. or 4 in. in length; each flower has a ring of yellow round the base of the brush-like mass of yellow anthers, and another ring of deep red round that. It is easily propagated, as the creeping stems root freely at every joint. Linaria dalmatica, with its shrubby habit, glaucous leaves, and large yellow flowers, is one of the most distinct and desirable members of the Snapdragon family. A Mediterranean Boragewort (Echium creticum) is a very showy plant; it grows about 2 ft. high, and bears a profusion of large deep red flowers. Sericocarpus solidagensis grows about 2 ft. high, and has very narrow leaves almost hidden by the white flowers; it is a graceful and pretty Composite. Chrysopsis pilosa, 2 ft. in height, has large flower-heads 1½ in. across, of a beautiful clear bright yellow colour; this North American perennial should be much more frequently met with. A Himalayan Composite (Saussurea albescens) is yet very rare in collections; it is a very floriferous perennial, about 5 ft. high, with lance-shaped leavest white underneath, and innumerable, rather small flowers, ligh, purple in colour. The handsomest of all the Groundsels is Senecio pulcher, figured in The Garden (see Vol. IX., p. 572); it is a fine plant from 1 ft. to 4 ft. high, with large purple flower-heads; it was discovered many years ago by Tweedie, at the foot of Sugarloaf Mountain, in South Brazil, but was only recently introduced to this country by Mr. J. Tyerman, of Penlee, Tregoney; in a cool, moist spot this plant seems to escape the attacks of the fungus, which often proves so fatal to it in drier, more open places. Opuntia Rafinesquiana, with its large yellow flowers, is one of the best of the hardy Cacti; it grows well and flowers freely, if planted in a position where there is rapid and thorough drainage, and if care be taken to prevent injury from the too abundant wet in winter; any rough-and-ready means to attain this end will do, *e.g.*, a piece of board or glass fixed 1 ft. or so above the plant, so as to shoot off most of the water which falls. Stokesia cyanea, a perennial from the United States, grows 2 ft. high and has large, showy flower-heads of a blue colour.

Greenhouse Plant.—A very striking and handsome plant is Hibiscus Manihot, a native of the East Indies; the flowers are 4 in. or 5 in. across, and are primrose-yellow, with a central blotch of deep crimson-purple.—†.

Common Jasmine in London.—The pretty white flowers on this old plant are so scanty that one is curious to know whether any attempt has been made by pruning or other means to make it flower more freely. There used to be a very fine specimen of it near Apsley House, and I continually see masses of the dark foliage, unrelieved by flowers.—J. S.

Salvia gigantea has been determined at Kew to be merely a strong form of S. Sclarea. Salvia patens alba is a very charming form, either planted alone or mixed with the blue one; both are hardy here.—T. Smith, *Newry.*

THE KITCHEN GARDEN.

SPADE CULTURE BEST.

The amount of produce raised upon land which has been subjected to spade culture is so much greater than that under the plough, that one cannot but wish that it were possible to bring more of the soil under spade culture. I know of many broad fields which the holders often maintain do not pay them to cultivate, and, judging from the crops which are seen thereon, I can well believe the assertion. The reason alleged is that the soil is so poor that nothing can be done with it, and yet, strange to say, portions of that same ground turned into labourers' gardens are made in a short time to yield abundant crops of excellent vegetables. The corner of a light sandy field, on which I never saw a good crop of any kind when under the plough, was some four or five years since allotted to two cottagers. The first season both Peas and Beans in these two gardens were meagre, the Potatoes seemed to dwindle away instead of becoming properly developed, and everything appeared to wither up on the advent of dry weather, even the fruit bushes seemed to burn up. The occupiers, however, were apparently not daunted, for next season found them digging away again. That year there was a visible improvement; the spade began to make itself felt, the field that season was nowhere in the race, and succeeding seasons have but served to increase the gap, until now those gardens produce plentiful crops of all kinds. Let us cite another example. In this instance a piece of ground was considered so poor that no one was willing to work it, and for many years it had been suffered to lie waste. The owner, however, at length conceived the idea of cutting it up into small portions, and letting it free of charge to the working men of the neighbourhood. For the first two or three years it did not pay for the labour, and many of the first holders retired from the struggle. Others took their places, and those who persevered had their reward, and that land, once the poorest and least valuable in the neighbourhood, now produces excellent crops. Stronger arguments than these cannot be needed to convince us of the desirability of increasing the area of ground under spade cultivation, for every rod of soil brought under the dominion of the spade is a clear gain to the community.

Byfleet. J. Cornhill.

American Rose Potato.—Although a very variable sort as regards quality, this is one of the most prolific Potatoes grown, and in dry light soils it is one of the earliest. In this locality it is superseding old sorts rapidly; this year I saw excellent crops of it, quite ripe enough for storing away, lifted in the middle of July; and crops of winter greens, Turnips, &c., being sown immediately, a good early start is effected—a great point where winter crops have to be grown principally after Potatoes.—J. Groom.

Foote's Green-fringed Lettuce.—We have not tested this as a Lettuce; but, judging from the appearance of a plantation of it in Messrs. Carter's seed farm at St. Osyth, it is a very ornamental plant. The leaves are finely fringed, and, forming a large rosette, the effect is better than that afforded by many of what are called "fine-foliaged plants." We believe this Lettuce is of Californian origin. Canon Hole once, on being conducted along an immense series of ribbon borders, &c., requested to be allowed to cool his eyes on the Parsley. He may henceforward find relief in at least one other plant not usually included among ornamental ones. We should not be surprised to see it used as an edging to beds of flowers.

Good Lettuces.—As I think it the duty of every correspondent to give his experience for the benefit of others, I wish to say a word in favour of Jefferies' Little Queen Lettuce. This is a smallish, dark green, black-seeded Cos, coming in early, with thick, fleshy ribs, very sweet and tender, yet crisp and of first-rate flavour; I think it the best and most delicate variety I have yet tasted. The St. Alban's All Heart is another good Cos Lettuce of a much larger growth. The Hanson is a fine pale green Cabbage variety of very large growth, but not so good in quality, perhaps, as Neapolitan, which I consider the best of Cabbage Lettuces. One of the best for all purposes is Hicks' Hardy White Cos, a good summer sort, and invaluable for winter culture; I have entirely given up Hammersmith in its favour. But no garden should be without the Little Queen.—W. Roden, M.D.

Potato Disease in Ireland.—The disease has made its appearance amongst the Potato crops here, and in some places very badly. Ashleafs are, however, as yet sound. Climax and Early Rose were the first to suffer. I have cut off all the affected haulm Scotch Dons are very badly diseased.—John Clews, *Headford, Kells, Co. Meath*

Tomatoes.—It is said that Tomatoes given to cows improve both the quantity and quality of the milk, imparting to the butter a golden colour. Does anybody know if in this last respect there is any difference whether the red or golden varieties be given to them? No wonder the Americans marvel when they see Tomatoes marked at 2s. a pound in Covent Garden.

THE FLOWER GARDEN.

HARDY WATER PLANTS.

The Cape Pondweed (Aponogeton distachyon).

Bog Arum (Calla palustris).

A hardy Marantad (Thalia dealbata).

In addition to the list of hardy Water Lilies enumerated at p. 54, there are many other aquatics which, when associated with them, much enhance the beauty of ornamental water. Those which are mentioned below are the finest selected from the large number now in cultivation, on the principle that one good plant is preferable to many inferior ones. This list is confined to those water-loving plants which require to be grown so that, whether in deep or in shallow water, the surface of the water quite covers their crowns. Although amongst these there are some very beautiful plants, yet they are surpassed both in beauty and number by those which inhabit bogs and other damp places. These deserve to be dealt with in a separate paper. All the following are in cultivation in this country, and the majority may be obtained from any hardy-plant nursery. They may be grown in pots, boxes, &c , using the same kind of compost as recommended for Water Lilies, or they may be planted in the bottom of the lake, &c. For small spaces I consider the former plan preferable, as many of the kinds rapidly develop underground stems which, if allowed to remain, would soon render the plants an entangled mass. Another advantage of pot culture is, that the plants may be raised or lowered as required by each kind. In large lakes, &c., where the bed is sloping from the edge, the planting-out system may be carried out with advantage, as suitable depths may be given to each kind. Care should be taken in planting to allow ample space for the strong-growing kinds, or they will soon overrun and destroy the weaker. First on the list is the beautiful Aponogeton distachyon, which has deservedly become a popular favourite on account of its pure white blossoms and delightful perfume. It is a native of the Cape, but is sufficiently hardy to withstand our ordinary winters, provided it be planted at a depth of 2 ft. below the surface. This plant has been so often described, and cultural notes have been so frequently given in The Garden, that I think further comment on it is needless, except to say that a more desirable water plant either for the indoor or outdoor garden would be difficult to find. There are several varieties given in trade lists, but none can lay claim to be very distinct from the type. Aponogeton spathaceum is of quite recent introduction to our gardens, and may now be seen in flower at Kew. It also is a native of the Cape, and in its present stage of development is smaller in every part than the preceding. Its leaves are about 1 ft. in length, very narrow, and standing erect out of the water. The flower-spikes are freely produced, and are about 6 in. long, branching at the ends in the same fork-like manner as in A. distachyon. The blossoms are densely arranged on the forked spike, and are of a delicate blush tint, but scentless. The plants are growing in water about 1 ft. in depth. It is a very desirable acquisition, and will doubtless soon become as popular as its well-known congener. The North American species of Pontederia are quite hardy and very beautiful. There are four kinds which differ but slightly from each other, except in the form of leaf; they grow to about 3 ft. in height, with the flower-spikes rising above the foliage, on which the bright blue flowers are closely arranged. The kinds are P. cordata, with heart-shaped leaves; P. angustifolia, narrow-leaved; P. lanceolata, lance-shaped; and P. cœrulea, with blossoms of a rather darker hue. They all require to be so immersed in the water that the crowns are below the surface. Caladium virginicum is another North American plant, and has very ornamental, arrow-shaped, dark green leaves, but the flowers are inconspicuous. C. canadensis is a species with slender leaves and longer lobes than the preceding. Closely allied to this is the well-known favourite Calla æthiopica, which, if planted at about 2 ft. below the surface, withstands with impunity our ordinary winters. Few plants are more effective than this when seen in company with other aquatics. The white-spotted-leaved Richardia (R. albo-marginata) has also withstood the past mild winter unprotected, and is now in full vigour. The Bog Arum (Calla palustris) is also a very desirable kind; its flower leaves contrast well with its bright green foliage. The three last-named should be placed with the crowns considerably beneath the surface. The rare Orontium aquaticum belongs to the same family, and is a very beautiful plant. The leaves, which stand erect out of the water, are about 1 ft. in length, of a beautiful glaucous green colour. The flower-spikes are of a bright canary-yellow colour, and are about 4 in. in length. It is found in ponds from Massachusetts to Virginia, near the coast, and to the southward of North America, and it deserves more extensive cultivation with us. It is perfectly hardy, and requires to be grown in rather shallow water. Than Thalia dealbata, a more stately plant amenable to cultivation in the open air is not to be found. In the neighbourhood of London it is apparently quite hardy if planted at a good depth. At Kew there is at the present time a good specimen of it in the hardy aquatic collection. It has broad leaves of a glaucous green borne on long stalks. The purple blossoms are borne in panicles, which, covered with a mealy-like substance, give it a peculiar appearance. It is a native of South Carolina, and, though uncommon in gardens, may be procured from most nurseries. Justicia pedunculosa is a North American plant, and has long been a garden favourite. It forms handsome specimens about 4 ft. high and as much across. The leaves are narrow and bright green, and from their axils the clusters of its purple and white blossoms are produced. It also enjoys the name of Dianthera americana, but under either it is a very desirable plant. Jussiæa grandiflora, also a North American plant, is a member of the Willow-herb family; it has long, trailing branches tinted with a dull red colour. The leaves are small and spoon-shaped below, those above being lance-shaped. The blossoms are borne on short stalks of a bright yellow colour and about 1½ in. across. If planted at the margins of water, it soon spreads, and covers a large space with its floating branches.

Nymphæa-like Villarsia (Villarsia nymphæoides).

The Buckbean (Menyanthes trifoliata).

Flowering Rush (Butomus umbellatus).

Sweet Flag (Acorus Calamus).

Arrowhead (Sagittaria sagittifolia).

We have in our native flora some very fine aquatics well deserving of culture, the following being among the finest. The Nymphæa-like Villarsia (V. nymphæoides) is a somewhat rare native plant, and quite surpasses in beauty many of the exotic kinds. Its leaves are like those of the Water Lily in miniature, borne on long creeping stems which float on the surface. The blossoms are borne in profusion on short stalks rising out of the water, of a bright yellow colour, and about 1½ in. across. It spreads rapidly, and should therefore be afforded a considerable space, and should be planted at the bottom at a depth of about 2 ft. Belonging to the same family, and scarcely less beautiful, is the Buckbean (Menyanthes trifoliata), a common native plant, but one which should always be included in the aquatic collection, both on account of its peculiar trifoliate leaves and its clusters of fringed rosy blossoms. The Flowering Rush (Butomus umbellatus) is a highly ornamental plant, with erect, narrow leaves from 2 ft. to 3 ft. high, above which rise the flower-stalks, bearing large umbels of rosy-coloured blossoms. The variegated forms of the Sweet Flag (Acorus Calamus) are very desirable. The beautiful striated sword-like leaves of A. Calamus variegatus rise about 3 ft. out of the water, and are tinted at the base with a deep pink colour. A much smaller plant is the Chinese variety (A. gramineus), with narrow Grass-like leaves, the variegated form of which is very pleasing. Some of the Arrowheads are attractive water plants. The common British kind (Sagittaria sagittifolia), with its double variety, is well worth growing; the flowers of the latter variety last a long while in good condition—much longer than those of the type. The North American kinds, S. obtusa and S. heterophylla, are not more beautiful than our native kind, but are well worth growing. Of our three native Water Plantains the best is the dwarf Plantago ranunculoides, which is a charming plant in spring, when it forms a mass of blossoms of a light pink colour. The great Spear-wort (Ranunculus Lingua) is a very ornamental plant, with large, glaucous leaves and handsome blossoms of a bright yellow colour, about 2 in. across. All the preceding native plants, with the exception of the Villarsia, may be planted either at the margins or in shallow water in boxes or pots. The following are either floating or submerged kinds. Frogbit (Hydrocharis Morsus-ranæ) is an interesting plant which is found in still waters, at the bottom of which it hybernates. It makes its appearance in the spring, and later on bears its pretty yellow blossoms from amidst its tuft of round leaves. The Water Soldier (Stratiotes aloides) is a very peculiar plant, reminding one of a submerged Pine-apple plant. The flowers spring from the centre of a rosette of sword-shaped leaves, and are of a white colour enclosed in green sheaths. It is not a stationary plant, but moves about at the bottom of the water. The Water Violet (Hottonia palustris) is a highly interesting and beautiful plant. It has much-divided, submerged leaves and large, pale purple flowers arranged in whorls on a spike rising sometimes 2 ft. out of the water. It is well adapted for shallow water. One of the Water Crowfoots (Ranunculus floribundus) is well worth a place. It has finely-cut, submerged leaves, and very numerous yellow and white blossoms rising about 1 in. above the surface, which in spring form, for a considerable time, very attractive objects. Many other submerged aquatics are very interesting, such as Lobelia Dortmanni, the Bladder-worts (Utricularias), the Pond Weeds (Potamogetons), &c.

Pontederia cordata.

Water Soldier (Stratiotes aloides).

Common Water Crowfoot.

For planting at the margins of lakes, &c., many members of the Galingale, Sedge, and Mace-reed families are very ornamental and graceful. The most desirable are Cyperus longus, which grows to a height of 5 ft., and makes fine specimens when kept from spreading, which it does rapidly; Typha latifolia, angustifolia, and stenophylla, upright-growing plants with Grass-like foliage, rising to a height of 6 ft.; the Bur-reeds (Sparganum simplex and S. ramosum) having much the same habit as the preceding, with round heads of inconspicuous flowers; the triangular Club-rush (Scirpus triqueter), and many of the large-growing kinds of Carex, all very ornamental, as is also the Prickly Twig-rush (Cladium Mariscus). The yellow Water Iris (I. Pseud-acorus) forms a very attractive object in the beginning of summer with its blossoms of yellow colour of many shades. Various kinds of the Horse-tails are very graceful, the best being Equisetum variegatum, fluviatile, and Telmateia. W.

Yellow Water Iris (I. Pseud-acorus).

Lobelia Lady Macdonald.—This is one of the most showy of the bedding Lobelias. Its flowers are larger than those of any other kind, and they last for a long time, even during hot weather. The flowers are of snowy whiteness, except the petals, which are deep blue. We saw a large bed of it in the Cheshunt nurseries the other day which was very attractive.—S.

FLOWER GARDENING IN HYDE PARK.

This differs but little this season from that of former years. The plants and flowers and their arrangements equal anything seen elsewhere, but we have no new ideas set forth, no fresh experiments tried, and but very little improvement generally. True, there have been new and, in some cases, superior kinds of Pelargoniums, Alternantheras, and similar subjects substituted for older sorts, but the style of planting in lines, in squares, or other formal-shaped beds, and of arranging these in pairs, is the same. Considering the great resources, as regards the varieties of plants, which we now possess for use in flower gardening, one cannot help thinking that in public gardens, at least, every bed should be as dissimilar from its neighbour as possible, in order to produce variety. Why, too, should the majority of the flower-beds in this our principal London park be of rectangular shape? The long lines of scarlet, blue, or yellow used along the margins of the shrubberies for so many years in succession might also now be changed with advantage. Another improvement would be the abolition of Pelargoniums and similar plants that have been planted immediately under the shade of trees, where they drag out a miserable existence during the summer. Such places might easily be covered with Ivy, or planted with hardy Ferns, or both; or there are endless varieties of Sedums and other hardy carpet plants which would succeed in such positions and have a much more pleasing effect than a few lanky scarlet Pelargoniums. To plant every available space with herbaceous plants might be objectionable, but, nevertheless, some of our showy hardy flowers which are found to succeed in London might, at least, find a place in our park borders, from which at present they are absent. In justice, however, to those who have the arrangements of the flower gardening here, it must be admitted that the style of gardening, as it at present exists, is carried out in the highest state of perfection. The beds are kept in excellent trim, and the condition of the Grass is unequalled anywhere near London. Two large clumps of Erythrina Crista-galli are full of flower, and some of the Yuccas planted in large groups have also blossomed profusely. The Palms dotted about in the Grass beneath the shade of trees are bright and healthy, and appear to be rather better disposed than usual. We noticed many thrifty Bananas of small size, and, where planted in groups, they are much more effective than larger plants, as their leaves do not get torn through rough winds to the extent of those of larger plants in isolated positions. Tobacco and Castor-oil plants have not yet attained a large size, and groups composed of Abutilons, Maize, Aralias, and similar plants are far too much crowded to be effective. The "dell" at the head of the Serpentine is better this year than we have ever before seen it; the plants which it contains are more happily disposed than in former years. Tall Cordylines have been introduced among the Ivy and low shrubs near the edges of the stream, as have also been Tree Ferns and Bananas; and Palms, &c., have been placed so as to leave a good breadth of green turf between them. The carpet bedding is, if anything, more formal in design than ever, but the plants have not been sheared down quite so much as formerly, which is an alteration in the right direction. The bronze-leaved Oxalis (O. atra-purpurea) is used with good effect, narrow bands of it being associated with green Mentha, grey Cerastiums, Golden Feather, Alternantheras, &c. Among Pelargoniums in beds the most striking are P. Jealousy, a kind with orange-coloured blossoms and crimped foliage. Robert Fish, a kind with yellowish Ivy-shaped leaves, is very dwarf, and bears bright orange-scarlet flowers on short foot-stalks. It is very floriferous, and one of the best of the dwarf bedding Pelargoniums. Wm. Wright is a good dwarf scarlet, and Amaranth is the best pink. Effective beds are composed of silver-leaved Pelargoniums planted alternately with Viola Blue Bell, and also of the same Viola and Iresine Lindeni edged with Pyrethrum Golden Feather and blue Lobelia. Viola Golden Gem is also mixed with Iresine, but the colours do not harmonise well. C. S.

Arundo conspicua.—Seeing notices of the Elymus, or Lyme Grass, in The Garden, reminded me that I have a few thoughts to put on paper concerning that very elegant Reed, the Arundo conspicua. This plant is truly named conspicua, as when in flower its tall plumes, from 9 ft. to 12 ft. high, may be seen from a great distance. The hot weather of the present summer seems to have brought this noble Grass earlier into flower than usual. My plants of it throw up their culms in June, and in the first week in July they were in perfection—and herein lies one of the causes that give the plant a value over its rival the Pampas Grass, for, while the latter plant in late October or November seems considering whether it shall bloom or not, the Arundo has been in flower for months. The peculiar grace of the Arundo consists in its tall slender culms, which carry the fine, drooping panicles clear of the foliage; being so tall and slender they are always in motion, and when viewed from a distance the plumes seem detached from the plant altogether. For planting in masses, in open spaces, on the margins of woods, drives, &c., especially when seen at some distance off, this fine plant would be very effective, and it would be equally eligible for planting round the margins of streams, &c., to which it would give character, and when planted in sufficient quantity it would form a fine cover for wild fowl, as its dense, fountain-like leaves interlace and grow into their neighbours, so as to form a jungle; and, like our native Aira cæspitosa, such is its extreme rigidity, that I believe it would be cattle-proof.—T. W.

Preparing for Spring Gardening.—Where spring gardening is carried on, provision must soon be made for it by putting in cuttings of Pansies, Alyssums, &c., and dividing the roots of Daisies, Aubrietias, and such plants as are increased readily by such means. Seeds must also soon be put in of plants that are naturally of an annual character; they will flower early enough the succeeding season to entitle them to a place amongst spring flowering plants. Wallflowers, Forget-me-nots, and such plants must be sown at once to get an early display of bloom. Myosotis dissitiflora is now largely grown from cuttings and divisions of the roots. There still remain large numbers of useful additions to the spring flower-beds that are easily raised from seed, such as Silene pendula and its pink, white, and rose varieties, Virginian Stock (pink and white), Saponaria (pink and white), Nemophila insignis (blue, white, and spotted), Limnanthes Douglasi (yellow), Honesty (Lunaria biennis—purple), Collinsias (purple and white), Candytuft (crimson, lilac, and white), Arabis alpina (white), Asperula azurea setosa (blue), Alyssum maritimum (sweet-scented, white), and Clarkia pulchella and alba (dark rose and white). These constitute only a few of the many plants available for the purpose, but in conjunction with Pansies, Violas, Primroses, Polyanthuses, and a good sprinkling of bulbs, they may be skilfully contrasted in colour with the other occupants of each bed, and, collectively, form both an interesting and striking combination.—J. Groom.

Flowers for Churchyards.—Allow me to solicit assistance on a subject which will, I trust, elicit sympathy. I am one of the few men who look upon a churchyard as not only "God's acre," but, if I may so express it, "a garden of sweet memories and holy thoughts." Everything that I can do to make this sacred place beautiful I do, but, up to the present, I do not think I have succeeded as I ought to have done. In the first place I have been a little selfish; being a great lover of the Rose and an ardent exhibitor, I have therefore devoted the various beds, more or less, to the exclusive cultivation of the Rose, and the consequence is that for nine months a year I have no flowers. This, however, is now at an end. I am gradually increasing my varieties of flowers and excluding Roses. My desire is to have the very earliest and latest flowers. I wish to commence with the earliest Aconites and bulbs and to finish with the latest Chrysanthemums, and here I crave assistance. I must inform you that I have no mounds. A cross of iron marks the head of the grave, and a bed from 3 ft. to 4 ft. runs at the bottom. In the churchyard there are eighteen beds of various lengths, and the whole is encircled by a wide bed bordered by a very fine Box hedge, and protected from the west by one of Yew. The wide border I devote to herbaceous plants, of which I have commenced forming a collection. I think I may keep four of these beds for Roses. Concerning the rest I want advice as to what to plant. I must, however, say that I find it almost impossible to grow soft-wooded florists' flowers, as rabbits are numerous and eat all my Stocks and Asters. I intend, however, to wire one bed for Carnations and Picotees. I shall be exceedingly grateful if any of your readers will advise me on this point, and give me a list of plants which will provide me with blooms for at least ten months of the year.—A Dorset Vicar.

A Fine Grass.—A correspondent informs us of a plant of Arundo donax at Orchardleigh Park, near Frome, bearing forty-one spikes over 12 ft. high. This noble Grass is as well worthy of a place as the Pampas Grass.

It was curious, last week, to see an old member of the once famous "Young England" party denouncing the appearance of ragged children in St. James's Park. The Young Englanders liked to patronise and play cricket with their own tenantry; but the sight of real poverty availing itself of the few opportunities for enjoyment which London affords offends them.—"Examiner."

"THE LAST OF THE GIANTS."

The Last of the Giants.

The late Charles Kingsley, in his "At Last," thus describes a part of his visit to the West Indies, and their rich woods and plantations and his experiences of the giant tree growths of those regions: "One clearing we reached—were I five-and-twenty, I should like to make just such another next to it—of a higher class still. A cultivated Scotchman, now no longer young, but hale and mighty, had taken up 300 acres, and already cleared 150 acres; and there he intended to pass the rest of a busy life, not under his own Vine and Fig tree, but under his own Castor-oil and Cacao tree. We were welcomed by as noble a Scot's face as I ever saw, and as keen a Scot's eye; and taken in and fed, horses and men, even too sumptuously, in a Palm and timber house. Then we wandered out to see the site of his intended mansion, with the rich wooded hills of the Latagual to the north, and all around the unbroken forest, where, he told us, the howling monkeys shouted defiance morning and evening at him who did 'Invade their ancient solitary reign.' Then we went down to see the coolie barracks, where the folk seemed as happy and well cared for as they were certain to be under such a master; then down a rocky pool in the river, jammed with bare white logs (as in some North American forest), which had been stopped in flood by one enormous trunk across the stream; then back past the site of the ajoupa, which had been our host's first shelter, and which had disappeared by a cause strange enough to English ears. An enormous Silk-cotton near by was felled, in spite of the negroes' fears. Its boughs, when it fell, did not reach the ajoupa by 20 ft. or more; but the wind of its fall did, and blew the hut clean away. This may sound like a story out of Munchausen; but there was no doubt of the fact; and to us who saw the size of the tree which did the deed it seemed probable enough. We rode away again, and into the 'Morichal,' the hills where Moriche Palms are found, to see certain springs and a certain tree; and well worth seeing they were. Out of the base of a limestone hill, amid delicate Ferns, under the shade of enormous trees, a clear pool bubbled up and ran away, a stream from its very birth, as is the wont of limestone springs. It was a spot fit for a Greek nymph—at least for an Indian damsel. Then we went in search of the tree. We had passed as we rode up some Huras (Sandbox trees), which would have been considered giants in England; and I had been laughed at more than once for asking, 'Is that the tree? or that?' I soon knew why. We scrambled up a steep bank of broken limestone, through Ferns and Balisiers, for perhaps 100 ft; and then were suddenly aware of a bole which justified the saying of one of our party—that, when surveying for a road he had come suddenly on it, he 'felt as if he had run against a church tower.' It was a Hura, seemingly healthy, undecayed, and growing vigorously. Its girth, we measured it carefully—was 44 ft., 6 ft. from the ground, and as I laid my face against it and looked up, I seemed to be looking up a ship's side. It was perfectly cylindrical, branchless, and smooth, save, of course, the tiny prickles which beset the bark, for a height at which we could not guess, but which we luckily had an opportunity of measuring. A wild Pine grew in the lowest fork, and had kindly let down an air-root into the soil. We tightened the root, set it perpendicular, cut it off exactly where it touched the ground, and then pulled carefully till we brought the plant, and half-a-dozen more strange vegetables, down on our heads. The length of the air-root was just 75 ft. Some 20 ft. or more above that first fork was a second fork; and then the tree began. Where its head was we could not see. We could only by laying our faces against the bole, and looking up, discern a wilderness of boughs carrying a green cloud of leaves, most of them too high for us to discern their shape without the glasses. We walked up the slope, and round about, in hopes of seeing the head of the tree clear enough to guess at its total height; but in vain. It was only when we had ridden some half mile up the hill that we could discern its masses rising, a bright green mound, above the darker foliage of the forest. It looked of any height, from 150 ft. to 200 ft.; less it could hardly be. 'It made,' says a note by one of our party, 'other huge trees look like shrubs.' I am not surprised that my friend M. St. Luce D'Abadie, who measured the tree since my departure, found it to be 192 ft. in height. I was assured that there were still larger trees in the island. A certain Locust tree and a Ceiba were mentioned. The Moras, too, of the southern hills, were said to be far taller. And I can well believe it; for if huge trees were as shrubs beside that Sandbox, it would be a shrub by the side of those Locusts figured by Spix and Martius, which fifteen Indians with outstretched arms could just embrace. At the bottom they were 84 ft. round, and 60 ft. where the boles became cylindrical. By counting the rings of such parts as could be reached, they arrived at the conclusion that they were of the age of Homer, and 332 years old in the days of Pythagoras. One estimate, indeed, reduced their antiquity to 2052 years old; while another (counting, I presume, two rings of fresh wood for every year) carried it up to 4104.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Rhus Cotinus in Masses.—This beautiful feathery Sumach is a grand object when grown in large irregular masses or clumps on the Grass. I lately saw an immense bed in full beauty, and although I have frequently stopped to admire this beautiful plant as a single specimen on Grass, I must confess that one only realises the full effect of which it is capable when planted in quantity and left to develop its full beauty undisturbed by pruning or training. —J. Groom.

The Rose Acacia as a Standard.—Many plants that have long been familiar, and perhaps on that account less prized, renew their charms when presented under some better form. Such a plant is the Rose Acacia (Robinia hispida) which under its low form is very attractive, but straggling even to unsightliness. The flowers must be always beautiful and the foliage graceful and delicate, but, grown low, the bloom is often obscured and the leaves trailing in the dirt. Let it, however, be once raised up by grafting on a high stem of Yellow Locust (Robinia pseud-acacia), and it becomes graceful and weeping. Both flowers and leaves suggest tropical vegetation. Indeed, the rosy colour and curious form of the flowers and the elegant appearance of the leaves attract the eye more readily than choicer and rarer plants. Even in this form, however, the Rose Acacia is not perfectly satisfactory, for the stems of the Robinias are very apt to be disfigured sadly by the borer, for which pest no efficient remedy seems to exist. Meanwhile, many years may pass before the borer fairly gains sway, so that abundant time for enjoyment will remain to repay the trouble of setting out the tree. Once unsightly, the axe will readily remove it.

Two Hydrangeas.—In dwelling on the great attractions of the Hydrangea paniculata grandiflora, probably almost an autumn-flowering shrub, we are apt to forget that there are other Hydrangeas possessing very charming qualities. For the present season of mid-summer Hydrangea nivea and H. carnescens are very valuable. If their flowers are less showy than H. paniculata grandiflora, they are earlier, large, of fine tint, and of curious formation. The shades of white or flesh colour that distinguish either variety are indicated by the names nivea and carnescens. They present, however, special attractions in their foliage over that of paniculata grandiflora, on account of the white colour of the under-sides of their leaves, as shown when tossed up by the breeze. A varied group of Hydrangeas forms an effective feature on the lawn.

A Late-flowering Weigela.—Weigela Lavallée is again proving itself a most noteworthy plant. After all other Weigelas have long done blooming, it puts forth a second and most vigorous set of its chocolate flowers, a fact that quite distinguishes it from others of the species. The foliage is equal in vigour and health to any Wiegela, while its flowers are unsurpassed for peculiar beauty. It remains, however, rare and, like most choice shrubs, grows in popularity slowly. —S. Parsons, in "Rural New Yorker."

Menzies' Arbutus.—A few of the species and varieties of Arbutus are, as ornamental evergreen shrubs, deservedly popular, but I have sometimes wondered that the noblest of all, A. Menziesi or A. procera, as it is sometimes called, is not more extensively planted. It is not less hardy than the common Arbutus, and its distinctiveness lies in its speedily attaining to a spacious tree, with large, handsome, oval, leathery leaves of a blue-green colour. When young it is of a compact, ovate-conical habit, and as such it is a suitable subject either for a promiscuous shrubbery or for an open lawn. When it attains maturity, as seen in the rather poor sandy lands near the coast in Upper California, where it is popularly known as the "Madrona," it forms a large tree from 30 ft. to 50 ft. in height, with wide-spreading head, and a bole from 2 ft. to 4 ft. in diameter. A striking and peculiar feature of it is the smooth, reddish bark of the trunk and older branches, which contrasts pleasantly with the glaucous leaves. Before me is a piece of petrified wood, exhumed from the sand and gravel formation on which the plant grows, which is either this or a closely-allied species.—Geo. Syme. [We noticed it also on the Californian mountains, at about 5000 ft., among the great Pines, a fine, stately, spreading tree.—Ed.]

THE FRUIT GARDEN.

REPORT ON FILBERTS GROWN AT CHISWICK.

Filberts have generally been divided into two classes, viz., (1) Filberts—Long-bearded—*i.e.*, having the husks longer than the Nuts; (2) Nuts—Short-bearded—*i.e.*, having the husks shorter than the Nuts. These distinctions, however, cannot be maintained. Popularly they are pretty correctly classed as follows:—

1. Filberts.—Varieties of oblong shape, like that of the finger-nails, and generally remaining in the husks: Bond, Barr's Espagnole, Barcelone de Loddiges, Cosford, A Grappes, A Grappes précoce, Frizzled, Lambert's Hartington Prolific, Lichtenstein's Zellernuss, Siegel's Zellernus, Red Filbert, and White Filbert.

2. Cobs.—Varieties of short broad shape, like that of the thumb-nail, large, and with thick shells generally falling freely from the husk: Atlas, Burchardt's, Merveille de Bolwiller, and Weismann's Zellernuss.

3. Nuts.—All the smaller varieties without husks: Aveline de Provence, Corylus arborescens, Corylus laciniatus, à Fruits striées, Small Cluster, and St. Grisier.

Atlas (Synonyms—Downton; Corylus algieriensis).—Husk hairy, about equal in length to the Nut, of a dark brown colour. Nut large, broad, angular, with a broad irregular base, parting freely from the husk when ripe; shell dark brown, very thick, and hard; kernel large, full, and of excellent quality. Plant of strong growth; fruits freely; ripe midseason. A splendid Nut of the Cob class.

Aveline de Provence.—Husk hairy, a little longer than the Nut, light coloured, sharply but not deeply toothed. Nut short, pointed, with a rather broad base, of a light grey colour, and parting freely from the husk when ripe; shell very thick and hard; kernel full. Plant of moderate growth; a great cropper, but late in ripening. This appears to be the same as the light-coloured variety of the Barcelona Nuts of commerce.

Aveline Rouge.—See Red Filbert.

Barcelone Blanc.—See White Filbert.

Barcelone de Loddiges.—Husk very large, full, covered with short hairs, twice the length of the Nut (which in some cases it completely covers), sharply serrated, light coloured. Nut of medium size, being almost hidden in the large husk, angular, bluntly pointed at the ends, dark coloured; shell very thick and hard; kernel full. Grows in clusters of five or six. Plant of very robust growth, with large dark green leaves; a moderate cropper; fruit ripens early. Very distinct, but too small.

Barr's Espagnole.—Husk downy, short, about two-thirds the length of the Nut (which it presses closely), deeply and irregularly toothed, of a dull grey colour. Nut much exposed, short, having a broad base, and tapering very nearly to the apex; shell downy, but very hard, of a dull grey colour. Grows in clusters of from four to six. Plant of medium growth; moderate cropper; ripens late.

Burr or Barn.—Not fruited.

Bizarre.—Not fruited.

Bond.—Husk downy, about one-third longer than the Nut, very deeply toothed, the segments very long and narrow. Nut exposed, medium size, ovate, light coloured, very soft and downy; shell soft, may be pierced with the thumb-nail; kernel small. Grows in clusters of from four to six. Plant of slender growth; midseason; prolific; does not keep well.

Cape Nut.—See Frizzled Filbert.

Burchardt's.—Husk downy, a little longer than the nut, deeply toothed, dark coloured. Nut medium sized, very broad, the breadth exceeding the height, angular, or nearly square, with a broad flat base, light coloured; shell thick; kernel very large, full, of excellent flavour. Plant of moderate growth; late growing; fruit ripens early.

Corylus laciniatus.—Husk very small, laciniated to the very base, and much reflexed. Nut quite exposed, small, short, somewhat flattened, but of even regular form, of a pale grey colour; shell very thick and hard. Grows in clusters from three to five. Plant of slender growth; leaves deeply cut or laciniated; fruits freely. This appears to be merely a cut-leaved variety of the ordinary Hazel (Corylus avellana). Ornamental.

Corylus algieriensis.—See Atlas.

Corylus arborescens.—Husk small, downy, about the same length as the Nut, laciniated to nearly the base; the segments long, linear, and reflexed. Nut small, does not part freely from the husk, flattened and broadly pointed, light coloured; shell very thick and hard; kernel full. Grows in clusters of five or six. Plant of moderate growth. A worthless variety.

Cosford (Synonyms — Miss Young's; Thin-shelled). — Husk downy, about equal in length to the Nut, very close fitting; toothed, light coloured. Nut large, oblong, rounded, remaining in the husk; of a warm light colour; shell very thin, may be easily broken between the thumb and fingers; kernel large, full, of excellent quality. Grows in clusters from three to five. Plant of moderate growth; leaves pale green; fruits freely; ripe mid-season. One of the finest Filberts in cultivation.

Downton.—See Atlas.

Downton Large Square.—See Atlas.

Franche Rouge.—See Red Filbert.

Frizzled (Synonym—Cape Nut).—Husk large, downy, somewhat exceeding the length of the Nut, pale or dull coloured; deeply laciniated or toothed, and reflexed to one-half its length, giving it a frilled or frizzled appearance, and thus exposing the Nut. Nut oblong, from 1 in. to 1½ in., somewhat flattened and broadly pointed; shell pale, thick; kernel large, full, of fine flavour. Grows in clusters of four or five. Plant of moderate growth; free fruiting; late in ripening. A very pretty and distinct variety.

A Fruits Striées.—Husk downy, longer than Nut; deeply toothed or laciniated, and opening away or reflexing, thus exposing the Nut when ripening. Nut small, long, and narrow, with a flat point; base irregular, pointed, light coloured; shell thin, hard. Grows in clusters of three to six. Plant moderately robust; grows late; free fruiting; ripens early. A very pretty Nut, but too small.

A Grappes.—Husk hairy, about the same length as the Nut, in two parts, which spread out from the Nut as it approaches ripeness; sharply serrated. Nut quite exposed, small, long, flattened, spoon shaped, light coloured; shell thick and hard; kernel full. Grows in clusters from five to eight; strong grower; ripens late.

A Grappes Précoce.—Husk large, very downy, about the same length as the Nut; very deeply toothed and partly reflexed. Nut small, long, narrow, and gradually flattened towards the apex like a wedge; shell downy, pale grey, thin. Grows in clusters of six to eight. Plant of slender growth; prolific; early.

Grosse Précoce de Frauendorf.—See Red Filbert.

Grosse Ronde de Piedmont.—See White Filbert.

A Gros Fruits Noir.—Husk very dark coloured, hairy, nearly as long as the Nut, in two divisions, fitting very close to the Nut, thereby giving it a bare appearance. Nut of medium size, long; the base narrow, widening to the apex, dark or dull coloured; shell very thick; kernel small; a moderate grower; prolific; does not ripen well.

Hartington Prolific.—Husk hairy, one-third longer than Nut; the extending portion deeply laciniated and reflexed. Nut small, long, narrow, and pointed at both ends, irregular, light coloured; shell thin; kernel full; fine flavour. Grows in clusters of six or seven. Plant of moderate growth; very prolific and very early. The earliest Nut to ripen, but too small.

Jeeves' Seedling.—See Siegel's Zellernuss.

Kentish Cob.—See Lambert's Filbert.

Knight's Small.—See White Filbert.

Lambert's Filbert (Synonyms—Kentish Cob; Filbert Cob; Spanische Nut.)—Husk downy, large, about one-third longer than the Nut, close fitting, and over the apex, of which it is occasionally contracted so as to enclose the Nut; very slightly toothed; dull coloured. Nut large, remaining in the husk; oblong, pointed; somewhat furrowed and irregular, of a dull grey colour; shell thick; kernel full. Grows in clusters of five or six. Plant of medium growth; a very great and certain cropper; fruit ripens mid-season. One of the very best Filberts in cultivation; very largely grown in Kent under the name of Kentish Cob.

Lichtenstein's Zellernuss.—Husk downy, large, a little longer than the Nut; bluntly toothed, the segments slightly reflexed. Nut medium size, long, pointed at both ends, of irregular angular shape, and nearly closed in by the husk, of a dull grey colour; shell very hard. Grows in small clusters. Plant of strong, late growth; ripens late.

Miss Young's.—See Cosford.

Merveille de Bolwiller.—Husk downy; about one-third longer than the Nut in two divisions; deeply and irregularly toothed, and pressing closely to the Nut. Nut large, rounded at base; very broad, the breadth nearly equal to the height, tapering to a broad point; very regular and uniform; light coloured; shell thick; kernel large; fine flavour. Plant of strong growth; grows late; prolific; fruit ripens mid-season. A very handsome and excellent variety.

Purple-leaved.—This is merely a purple-leaved variety of the Red Filbert. A very ornamental plant.

Red Filbert (Synonyms—Aveline rouge, Franche rouge, Rouge d'Algiers, Grosse précoce de Frauendorf).—Husk downy, of a reddish brown colour, nearly twice the length of the Nut, round the apex of which it is contracted, thereby enclosing the Nut. Nut remaining in the husk small, long, and pointed at both ends; shell thin but hard; kernel very full, having a red skin; finely flavoured. Plant of slender growth; very free fruiting; ripe mid-season. A very excellent variety.

Rouge d'Algiers.—See Red Filbert.

Small Cluster.—Husk small, hairy, deeply divided into two parts of about the same length as the Nut; toothed, and pressing closely to the Nut. Nut small, short, with a broad-pointed base; light coloured; shell thin but hard; kernel full. Grows in clusters of from eight to ten; slender growing; prolific, but too small. Worthless.

Siegel's Zellernuss (Synonyms—Sickler's Zellernuss; Jeeves' Seedling).—Husk downy, short, extending to three-quarters of the length of the Nut; very deeply toothed and reflexed, the Nut thereby being almost entirely exposed. Nut large, oblong, with a broad rounded base, becoming flattened towards the apex, light coloured; shell thin; kernel large, full. Grows in small clusters; moderate grower; ripe mid-season.

Spanish Nut.—See Lambert's.

St. Grisier.—Husk downy, or having only short hairs; a little longer than the Nut, which it presses closely; sharply toothed. Nut of medium size, short, roundish, with a broad base; of a dark brown or reddish colour; shell thick, but easily broken; kernel large, full, of excellent flavour. Grows in clusters of three to six. Plant of slender growth; very prolific; ripens early. This appears to be the same as the reddish coloured Barcelona Nut of commerce; perhaps the finest flavoured of all Nuts.

Weismann's Zellernuss.—This is very similar to Merveille de Bolwiller, but larger.

White Filbert (Synonyms—Knight's Small; Barcelone Blanc; Grosse ronde de Piedmont).—Husk hairy, light coloured; nearly twice the length of the Nut, round the apex of which it is contracted, thereby enclosing it. It frequently bursts a little on one side, whereby the Nut is exposed. Nut long, small, remaining in the husk, pointed at both ends; shell thin, very firm; kernel large, full, of fine quality. Grows in clusters of from five to eight. Plant of slender growth; a very heavy and certain cropper; fruit ripens mid-season. A very excellent and useful variety.

List of Select Nuts for General Cultivation.—Atlas, Cosford, Lambert's, Merveille de Bolwiller, Siegel's, Zellernuss, and White Filbert.—"Journal of the Royal Horticultural Society."

A GEORGIA FRUIT FARM.

Dr. Hape has a farm eight miles from Atlanta, consisting of 275 acres, of which fully one-half is cleared, and 100 acres are in fruit of every description. He has between 4000 and 5000 Peach trees and 1000 Pear trees, as many Apple trees, and 1600 Grape Vines. The larger part of his Peach orchards are of the early sorts, as these are the most profitable. Dr. Hape has whole orchards of a single kind of Peach. For instance, he has 500 trees in a body of the Early Tillotson. His trees are loaded with fruit, and are a marvel of prolific beauty. He had the Amsden and Alexander Peaches first, then the Beatrice, then the Louise, then Hale's Early. This latter variety has rotted badly this year. He has a young orchard of 300 Crawford's Early trees about ready to bear, and also an orchard of the Amelia. The Chinese Clings, the earliest and finest of our Clingstone Peaches, are about ready to come into bearing. Dr. Hape is the originator of a seedling Peach, called Hape's Early, that bids fair to equal if not to surpass any early Peach now known in flavour, size, hardiness, capacity for shipping, and beauty. He has thoroughly tested it. It has also been critically examined by the Pomological Society, and, after severe inspection, unhesitatingly endorsed as a new and valuable early variety. It is a distinct Peach of marked features. Dr. Hape has been shipping his fruit to New York and Baltimore, averaging 10s. 5d. per bushel, which leaves him a fair profit. He ships in quarter of a bushel and sixth of a bushel crates, which he makes upon his place, at his own saw-mill, costing him about 4d. a crate. He has the fruit gathered by hand by negro women, and laid carefully in the crates. The crates are then culled by a careful hand, and over-ripe and imperfect Peaches are removed. None but solid, perfect fruit is allowed to be shipped. Fruit just ripe and mellow is sold in the home market here. The imperfect fruit is given to the hogs. The ripe fruit, too soft for shipment or home sale, is made into Peach "leather," as it is called. The Peach is pressed through a sieve, getting rid of the skin and stones. The moisture is then dried out of the Peach, and the pulp is made into sheets of pure sweet Peach "leather," infinitely better than dried Peaches, with all the flavour of the fruit thoroughly preserved.

Adding water and boiling gives you Peach for preserves, pastry, sauce, or rolls. In the management of his *employés* Dr. Hape is very successful. He carries on all his enterprises on shares, giving his labourers an interest in the crop. In this way he makes everything pay. His Grape Vines are very thrifty, and well cared for. They are staked and tied up strongly, and pruned judiciously. He has 150 Scuppernong Vines, but does not speak favourably of his experience with them. His Vineyards show care and skilful attention. He has all the common varieties, but I believe prefers the Concord and Delaware. His Pear and Apple orchards show the same care. The blight has been making havoc in the Pear trees in this section, but for some reason or other Dr. Hape's trees show an almost entire exemption from it. In his large orchard I noticed only two cases of blight. The most attractive sight on his farm is the nursery of young fruit trees. He has fully 60,000 young trees in this nursery, which covers an extent of nearly 20 acres, and finer, more vigorous, healthy young trees I have never seen. In addition he has fully 70,000 young stocks ready for grafting next season. He pays especial attention to his stocks, and the result is that he has always very superior trees. He raises all the finest Strawberries—the Monarch of the West, Eclipse, Parmlee's Crescent Seedling, &c. He made £60 this spring selling the berries from a small bed, and said that he could as easily have sold £200 worth. He says that any man who will raise early and fine fruit can find sale for it. The most signal achievement that Dr. Hape has performed, however, and of which he is evidently the most proud, is the reclaiming of about 25 acres of useless marsh land by underground draining, making it the most valuable bottom land, of a productive capacity that can hardly be estimated. He has done this at a cost of not much more than £50. His drains are all covered. He has tried several styles of drains—the log drain, the rock drain, and the plank drain, the latter a triangular drain. As he has his own mill, he finds the latter the cheapest. This worthless bog has been brought into the highest state of fertility, and I saw crops of Cabbage and Tomatoes on it that could not be beaten.—"Country Gentleman."

Apples in June.—In the grounds of the Paris Exhibition is a fine collection of fruit trees, trained in a variety of forms. The following are the names of a portion of the collection of Apples, remarkable for the time of year, shown at the Trocadero by Messrs. Francesco Cirio & Co., of Turin, in the latter part of June last: Magnana, Rosso Commune de Borge, Losa, Reinette Rouge, Rovetti, Rosso Roso, Bocchiard, Rucco Piatta, Marseille, Bedre a Farojhe strie, Calville Rouge panachée, Reinette Eigrorgne, Palanchino, Reinette Francator, Bigea Fanger, Carli de Mondor, Reinette Michel, and Reinette Savoye. These Apples had been kept for a very long time.—R. S.

A Plate of Early Peaches.—The following notes of some of our early Peaches were made from specimens taken from the orchards of H. M. Engle, of Lancaster Co., Penn., and although some of the fruit was not in proper condition for eating, the test was fair in regard to the time of maturity, &c. The best variety, perhaps, was the Musser, a Lancaster County seedling, measuring 6¾ in. in circumference, very handsome, and of excellent flavour; in every respect, excepting, perhaps, the fault of clinging too tightly to the stone, a first-class variety; but its early period of maturity amply compensates for that. The next in point of excellence, and very little inferior to the above, was the Wilder, a seedling of Mr. Engle's own production from Hale's Early, I believe. In outline and colour closely resembling the Musser; the Wilder is 6½ in. in circumference, of very fine flavour, and abounding with a pleasant juice. This specimen was from the original tree. Another fine specimen was from a young tree, and measured 8 in. in circumference. The Alexander was unripe, and in consequence lacked flavour; it was 6½ in. in circumference, but inferior to the foregoing in appearance, and evidently later in ripening. Among the noted Rivers' varieties, Early Louise appears to be the most valuable, measuring 6¼ in. in circumference, but with a dry and rather insipid flesh. The specimens of Early Beatrice did not do this fine variety justice, as they only measured 4¾ in. in circumference, and were poor in quality. The Early Rivers, a poor specimen, badly decayed, was only medium in size and quality, yet rather showy in appearance. The foregoing were tested July 6, and, considering the latitude where grown, was a great point gained over the early Peaches of a few years ago. The only fault these early fruits have, and it seems common to them all, is the cling-stone nature of the flesh. If this can be remedied, their value will certainly be greatly enhanced; our Northern buyers, at least, are prejudiced against this character, and many purchasers will not use them. As redeeming points, however, they are all very juicy, and possess a fine flavour, singularly alike.—Josiah Hoopes, in "New York Tribune."
[All of these early Peaches seem to merit trial here.]

PLATE CXLI.

JAPANESE CHRYSANTHEMUMS.

Drawn by Mrs. DUFFIELD.

From an artistic point of view these are among the most valuable flowers introduced for many years. On their introduction, some few years ago, a very decided adverse opinion was expressed as to their merits. Those who had grown the neatly-shaped and symmetrical incurved, Anemone, and other varieties were disconcerted by their (at that time) ragged appearance and somewhat dingy colours. Since then, however, the flower has received very careful attention from many first-class raisers and growers, with the result that the improvement has been so great that, as regards colour, they have distanced the incurved varieties, though, of course, they do not present the uniform appearance of the older section. In a yellow variety, named Peter the Great, the points of the petals incurve, a style to be deprecated, as the blending of the incurved and the Japanese sections does not appear, to my mind, to be at all desirable. They should be so distinct that no error could possibly arise as to their position amongst Chrysanthemums, and their fine distinct form should not be destroyed. The prejudice against them is now (with the exception of a very few of the old school of Chrysanthemum growers) wearing away, as it certainly must do, considering the fine colours and handsome forms that most of the varieties possess. For grouping among tall plants for the decoration of the conservatory they are unrivalled, and a few so placed add a charm to that structure at a time when it is very often somewhat deficient in flowering plants, as a suitable selection will ensure bloom from October till January is far advanced. The following embrace a few of the most desirable varieties; they are all well tried, and can, without exception, be depended upon as a fair representation of the Japanese section:—

White.—Elaine, Fair Maid of Guernsey, Emperor of China (not pure white; very late).

Yellow, &c.—Meteor, Gloire d'Or, Gold Thread, Golden Dragon, Fulton, Sir H. Brock, grandiflorum.

Rose, &c.—Baronne de Prailly, James Salter, roseum punctatum, Gloire de Toulouse, Mdlle. Delaux, Comtesse de Beauregarde, Belle Castallane, Aimée Maurel.

Bronze, &c.—Bronze Dragon, Bismarck.

Red, &c.—Dr. Masters, Garnet, Hero of Magdala, Dictator (highly perfumed), Triomphe du Nord, The Cossack.

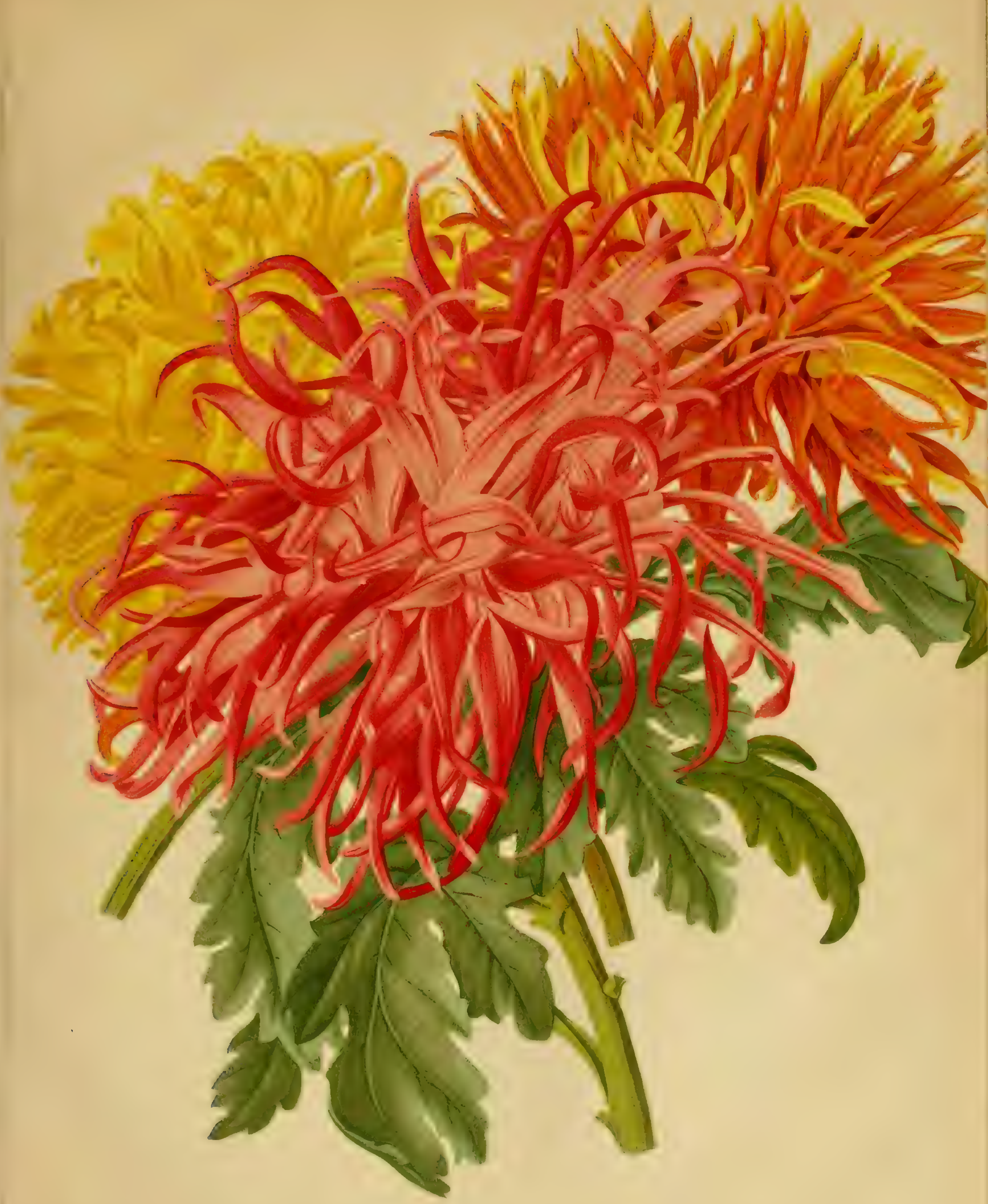
F. T. D.

[The specimens from which our plate was prepared came from Mr. F. T. Davis, of Plumstead, and are the yellow grandiflorum, the Comtesse de Beauregarde, and Dr. Masters.]

Shelter and Shade in Nursery Grounds.—I recently observed a good system of affording shelter from cutting winds by means of Privet hedges about 20 ft. apart, with Cherry trees planted at intervals. These gave considerable shelter, and afforded a congenial position for plunging the numerous subjects that are introduced to the glass structures during winter and spring, such as Spiræas, Roses, bulbs, &c., which, although quite hardy if left continuously out-of-doors, need some kind of shelter when removed from the glass roof, and for which, during the early spring months, shelter from winds is of greater importance than even protection from actual frost.—J. G.

Emigrant Sparrows.—Great alarm is expressed in America at the increase of the English sparrow, which was first welcomed as a deliverer, and is now in many places a great pest. Dr. Cones has a long and spirited paper on the subject in the "American Naturalist." He adds that the article is to be regarded as a mere outline of so important a subject. He has collected a voluminous mass of testimony during the past two or three years, which he intends to digest, in order to place the whole matter in its true light on permanent record, in treating of the species in the "Birds of the Colorado Valley." For the plague has spread even to that remote portion of much-be-sparrowed America.

Mr. Charles Darwin has been elected corresponding member of the Paris Academy of Sciences in the section of zoology by twenty-six votes against fourteen. This success is all the more notable that Mr. Darwin obtained only five votes in a scrutiny which took place quite recently. Professor Asa Gray has been elected corresponding member in the section of botany in succession to the late Dr. Braun, of Berlin.



JAPANESE CHRYSANTHEMUMS

PROPAGATING.

Cupressus Lawsoniana.—This elegant Conifer may be propagated by means of cuttings put in in August. Prepare well drained 6-in. pots and fill with finely-sifted soil consisting of equal parts loam, leaf-mould, and peat, placing a good layer of the siftings over the crocks to ensure good drainage; press down the soil rather firmly and place ¼ in. of sand on the top of it, then give a good watering, and when settled down prepare the cuttings as shown in fig. 1. In inserting them tighten well in with a peg or dibber and water with a fine-rosed pot; plunge the pots, half way up, in a tan bed without any covering and without surface-heat. Under such conditions, they will root in about three months, when they may be removed to the shelves of a greenhouse to be ready for potting off or planting out in the following spring. This Cypress may also be increased by grafting in March. Fig. 2 represents the stock, and fig. 3 the scion. Use either matting or strong thread for binding them together, place them in the grafting box, and keep close. Two months generally elapse before they are fit to be removed. H. H.

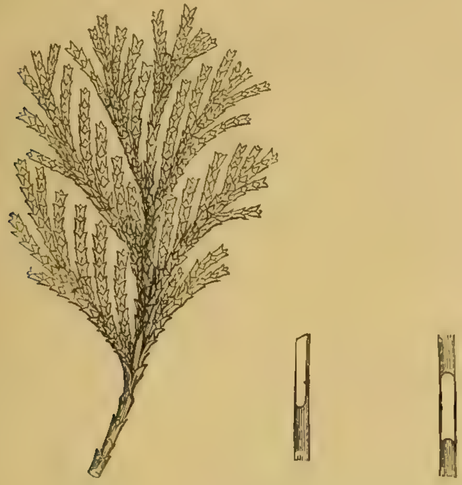


Fig. 1. Fig. 2. Fig. 3.

Cutting and Grafts of Cupressus Lawsoniana.

THE PROPAGATING SEASON.

Cultivators are pretty generally agreed that the propagation of bedding stock and many kinds of border plants should not be delayed much beyond the beginning or middle of August. They would indeed propagate some plants earlier, Pelargoniums particularly, if it were not for damaging the beds early in the season. The reason of propagating most kinds of stock before the heat of summer declines is that cuttings do not root so freely in autumn under the influence of artificial heat. Pelargonium cuttings of all kinds, even to the tenderest tricolors, will root freely in the open air about this time, and it is a mere waste of time and means to try to strike them under glass; but a month later they will require protection, though the greater portion will fail. The best way to strike Pelargoniums is in shallow boxes about 4 in. deep; no drainage more than one crock over each hole in the bottoms of the boxes is necessary. A finely-sifted compost, consisting of leaf-mould, loam, and sand in equal parts, should be used, and nothing like fibry material should be placed in the bottoms of the boxes under the compost—a common practice—because the roots get into it, and when the plants come to be potted off, it is impossible to disentangle them without injury. Good, large Pelargonium cuttings should be selected, smoothly cut over at a joint, and inserted in the boxes in rows about 2 in. apart; and after having been watered, they should be placed in the ground in some warm, sunny situation, and be left there till they are rooted. Over-watering must be avoided, but at the same time the soil should not be allowed to get dust dry. This treatment is all that is necessary to ensure a good strike of Pelargoniums of any kind.

Lobelias are now very generally propagated by cuttings, owing to the superiority of the named sorts over seedlings, which always run too much to grass. It is often difficult to get good cuttings at this season, but usually a sufficient quantity of soft shoots are to be found springing from about the base of the plants; these should be secured. Have the flower-buds picked off them, and cut at about the third joint with a sharp knife, and before they have time to flag prick off into 6-in. pots filled with light, rich compost consisting of two parts sand and one part loam and leaf-mould. The pots should be plunged in an unheated frame, which should, however, be kept closely shaded and moist till the cuttings are rooted. Afterwards the plants may be gradually hardened off and stored for the winter in any cool, dry house where they can have plenty of light and air. Such plants are, of course, not intended to afford cuttings in spring, and need not be potted off. By February and March they will yield thousands of good tender cuttings which will root readily and make fine plants. Heliotropes, Gloxinias, Verbenas, Ageratums, and such like should be treated in the same manner, but a little later in the season. Most of these will require the assistance of a little artificial heat. It is safe to say that they will not root readily under a temperature of 65°, with a proportionate rise in the daytime. The great secret of striking all kinds of soft cuttings is a proper temperature, shade from strong sunshine, and a genial, moist atmosphere. Air should, of course, be admitted to the frame, but not in sufficient quantity to cause the plants to droop. In an unheated frame an opening sufficiently wide to admit a label will be enough. Viola, Cerastium, and other hardy subjects may be easily propagated by division or cuttings about this season, or a little later in open borders; Pentstemons and Calceolarias under hand-lights or in a cold frame, but the latter must not be propagated till October.

Coming to herbaceous plants, Carnations and Hollyhocks should be propagated without delay. Layering is the best way with Carnations. A heap of sand and leaf-mould should be laid round the collars of the old plants, and into this the young grass must be pegged, first clearing off a few leaves from the shoot and making a slit with a knife upwards from one joint to another, when it should be pegged, keeping the split heel down in the soil. Hollyhocks usually yield plenty of young growths from the base of the plants, and these should make cuttings to be struck in a cool frame or under handlights. Now is a good time to sow that effective spring-flowering Stock, the East Lothian. If sown now, in pots or in a bed slightly protected during the winter, they may be put out in spring in the borders, where they will flower early, and if some are kept in their pots they will make good conservatory ornaments. Of course good plants that have been sown earlier than these may be planted out at once to stand the winter, but this is not advisable where rabbits abound, as they are very fond of them and will be sure to devour them during the winter.

Those who desire to grow Roses on their own roots should at once put in Rose cuttings, which should be from 6 in. to 9 in. long and taken off with a heel. The cuttings should be inserted 3 in. or 4 in. deep into a sharp and rather light sandy soil on a shady border, where they can remain till the following February or March, when they may be transplanted.

Turning to plants in glass houses, several things require attention. Named Cinerarias should be propagated by slips from old stools, which, if they have been properly cared for, will be pushing freely from the base of the old stems. To have a good succession, batches should be potted in 4-in, pots, and be shifted on as required during August, September, and October. The best place for the young plants is a cool frame, but when they come to be shifted into larger pots they will require to be housed. Calceolarias for blooming next summer should be sown about the middle of the present month. The seed should be sown very thinly in fine, light, rich soil and loosely covered over. It will come up sooner if a pane of glass be placed over the seed-pan, which should be kept continually moist. Early-struck Poinsettias will now be growing apace, and later batches should be put in during the next month. The cuttings should be struck singly in 4-in. pots, from which the latest need not be shifted, as the plants will flower in that size, and be useful for edging the front of shelves of the conservatory and for decorative purposes in the house.

Mignonette for winter flowering should be sown without delay. It should be sown in the pots in which the plants are to flower. 7-in. pots are a good size; these should be drained and filled with a compost consisting of loam and a little leaf-mould, well-rotted cow manure, and a sprinkling of sand and lime rubbish. The pots may be plunged out-of-doors in a warm situation until the plants come up and are well grown and coming into flower. About six weeks hence or later they should have a place in the cool greenhouse, where they can have plenty of light and air.

In the fruit department there is not so much propagating to do. Strawberries and Cucumbers are the two items of importance. It is still time to pot Strawberries; indeed, no time will yet have been lost if the runners have been laid in good time and are still growing freely in the open quarter; but they should be transferred to pots as soon as possible, and any pots of moderate size should be used, even for strong-growing kinds, so late as this, else the plants will not be well matured. Good loam should be employed, and the plants should be rather firmly potted. Those who have not layered runners for the purpose, and which are always preferable, may raise tolerably good plants by taking up stools not too old and dividing and potting them in 5-in. and 6-in. pots. For early winter crops of Cucumbers this is just the time to sow. The seedlings should be raised in a smart stove heat, and be potted off as soon as they have made their first rough leaves, and when established planted out in the bed, which will be about the beginning of September. If from that date they are pushed on gently with plenty of air and not too much moisture, they should begin to bear in October or November, and continue to do so till well on in spring, or even till summer if the plants have not been overcropped. J. S.

PROPAGATING PINKS.

Plants of these may be raised in two ways, viz., from seed and pipings. If new varieties are wanted seeds must be saved from hybridised flowers, that is, the pollen must be removed from the flowers to be operated upon before it is in an active state, but the stigmatic portion must be kept uninjured; this, then, will be the seed bearer. The pollen must be taken from a suitable variety when its flowers are fully expanded, and be applied with a camel's-hair pencil. The seed should be sown in April in pots, and when the plants are large enough to handle they should be pricked out on a level surface of fine soil, consisting of equal parts of sifted turfy loam, well-rotted leaf-mould, and sharp sand. Prick the plants out 2 in. apart, as they do best when not too far apart at first. When they have quite filled the space allotted to them they should be moved to 4 in. apart, to be a third time planted out in their permanent quarters in October of the same year, where they will flower with the named sorts the following season. The named kinds are propagated by taking cuttings or pipings at the time the plants are in flower. Thin wiry Grass strikes root more readily than that of a stronger and more succulent character; but if the centres of the strong growths are pinched out, lateral growths will be formed, and when large enough these may be slipped off from the main stem and inserted at once without any other preparation. I have tried different systems of management with the Pink pipings both in England and Scotland; but I never was more successful than when I took the pipings when young and small, selecting a shady position out-of-doors—for want of a better, the north side of a hedge or row of Gooseberry bushes—and put them in at once. I always choose a wet day for the purpose, if possible, and herein lies, to some extent, the secret of success. In this way I got ninety plants at least out of every hundred cuttings. I have tried different and more scientific systems, but with less favourable results. In the hotter and more arid atmosphere of the south-eastern counties, where the pipings will not strike root readily out-of-doors, the plan I have successfully pursued has been to obtain boxes of any convenient size about 3 in. deep, and, having drained them well, to fill them with a compost consisting of sifted loam and leaf-mould, and adding to it one-third part of sand. Use the siftings for the bottom of the box, and the finer portion, mixed with sand, for the top, pressing all firmly, and making the surface quite level. The pipings may be put in firmly about 1 in. apart in rows 2 in. apart; larger pipings may be a little wider. I put the boxes in a frame over a little bottom-heat, and if the frame be placed under a north wall all the better. Shade from bright sunshine and remove the lights entirely on quiet dewy nights. If the Grass be in good condition, but few losses occur in this way. When most of them have formed roots, the lights are removed by day, and the boxes ultimately placed in the full sunshine. When they can stand this I plant them out, in August, 4 in. apart, finally planting them in highly-manured soil at a distance from plant to plant of 9 in. If it be possible to obtain a layer of about 2 in. or 3 in. of fine maiden loam to place on the surface before planting, a much more luxuriant and healthy growth will be the result.

The following is a list of the best Pinks at present in cultivation: Annie (McLean), Bertram (Turner), Device (McLean), Dr. McLean (Turner), Emily (Battersby), Excellent (Turner), Excelsior (Marris), Freedom (Hooper), John Ball (McLean), Godfrey (Turner), Harry Hooper (Hooper), Lady Craven (Hooper), Lord Kirkaldy (Turner), Mildred (Turner), Mrs. Howarth (Hooper), Mrs. Mitchell (Hooper), Nonpareil (Bragg), New Criterion (McLean), President (Turner), Prince Frederick William (Hooper), Princess of Wales (Hooper) Reliance (Hooper), Rev. G. Jeans (Kirtland), Sarah (Turner), Victory (Hooper). There is not much being done now in the way of raising new varieties; Shirley Hibberd, a very large, full flower, with broad, richly laced petals, is, however, a good kind; Dr. Masters is also a large full flower, rather weak in growth, but very distinct; and Boiard is perhaps the finest Pink yet raised; the petals are very broad, the flowers full and of good shape, the lacing purplish-red and well defined.

Loxford Hall, Ilford. J. Douglas.

PROPAGATION AND GENERAL TREATMENT OF TRICOLOR PELARGONIUMS.

The tricolor section of the Pelargonium family is justly esteemed for the contrast which it affords to the plain-leaved kinds. They are popular both as pot plants and for beds, and would be much more extensively employed in the latter capacity were it not for the fact that they are not so robust in habit and free in growth as the zonal kinds. They are both more difficult to obtain a stock of and to keep in health during the winter. Mrs. Pollock is, perhaps, even now the most useful of the tricolor bedders, but it does not keep well with the ordinary treatment which Pelargoniums get in winter time, and consequently comes out in spring in a debilitated condition, often requiring half the summer to re-establish itself in health. This is more especially the case with respect to plants which have been taken up and potted in the autumn. The rains and damp nights render them sappy, and, not becoming established before winter sets in, they soon lose their leaves, and, unless very carefully handled, they damp off entirely. The best way to ensure a stock of healthy plants is to put in a batch of cuttings early in the summer, grow them on in a house or frame, getting them well established in 3-in. pots by the autumn. On very hot days they may be afforded a little shade for two or three hours, but from the middle of August they should get the full benefit of the sun and air. They will thus make strong, sturdy plants, possessing a store of vitality which will carry them well on through the winter. The best place to keep them is on a shelf near the glass in a light, dry house, and during the dull months they should only get enough water to keep them from flagging. Until March they should be kept as cool as possible, merely firing on cold, damp days, to promote circulation and expel the damp air. This is a necessary attention, as they suffer acutely from a continuance of cold combined with a stagnant atmosphere. If thus treated they will come out in good, fair condition, and, although they will perhaps have become somewhat devoid of leaf, they will start with the season, and will be ready to make good growth when planted out. If in March they can be placed in a house where they get the benefit of a rise in the temperature for about six weeks, they will make larger and handsomer plants than they would otherwise do. In this case a shift into 4-in. pots will benefit them, giving them a generous compost of leaf-soil and manure. They must, however, in no wise be stinted of air at this period, but may be shut up early and syringed on fine days, which will have the effect of increasing the root action, and will produce a corresponding effect upon the foliage. About the latter end of April remove them into a cold frame and gradually harden them off. One plant treated in this way will produce a greater effect than half-a-dozen autumn-struck cuttings. I do not approve of planting out the tricolors too early. They are not so vigorous in the root as most other kinds of bedding plants, and, consequently, do better if not put out until the ground gets warmed a little. Sometimes heavy rains during May sodden and chill the soil to such an extent, that the plants are much better in the pots. The soil, too, should be well prepared for their reception; an admixture of leaf-mould, or the knockings out of pots, added to the ordinary garden earth, will suit them well. A hard, sour soil is fatal to them. When once a stock of tricolors is obtained it is easy enough to keep it up, but as they do not grow so strongly as other kinds, the process of working up a stock in the ordinary way from a few plants is rather tedious. When planted in the open ground they must needs take the weather as it comes; and a cold, wet, or very parching summer will so stunt their growth, that but few cuttings are procurable. One of the best methods of increasing any particular kind is to plant the stock out in frames in a good, free, rich compost, preserving a good distance from each plant. They should be put out early in April, and will then have a good long season for growth. As soon as there is a cutting to be got, take it off and insert it in the soil in the frame, if there be room, with the mother plants; or if not, in a frame prepared in the same manner. It will speedily root, and, starting strongly into growth, will soon furnish more cuttings, which are to be similarly treated. There are several advantages accruing from this plan. In the first place, there is no waiting to get a batch to take off, no preparation of cutting pots needed, and there are scarcely any losses from damping. The plants grow more strongly as one is better enabled to regulate the atmosphere, and propagation is rendered easier and more certain. In very hot weather a little shade may be given, and they should be supplied with plenty of moisture at the root. The sashes are to be kept on in cold weather, leaving air constantly, but on warm nights they should be withdrawn entirely. It is really surprising what a stock may be worked up in this way; and those who may have but a few plants of any kind which they would wish to increase to any extent, would do better to thus treat them than to plant them out in the ordinary manner. By the beginning of September it is advisable to pot them, as they then get rooted by the winter. The young plants will come up with good balls, and should be placed in pots sufficiently large to admit the roots. In a few days they will have made root, when they must be exposed to the sun and air, but not to the rains; in fact, it is as well to place them at once in an airy house, as if left out the damp nights cause them to keep on growing, whereas the object should be to harden the wood and foliage as much as possible. A damp atmosphere induces flaccidity of the leaf, and renders them unable to withstand the vicissitudes of the winter months. Those taken up from the beds should be crammed into as small pots as possible; and if they can be plunged in a gentle bottom-heat for a week or so, it will much benefit them. These old plants are very apt to waste away in winter from want of root action. When thus treated, however, they form a fresh lot of fibre, which enables them better to stand the dark months. These same old plants, if well attended to in the early part of the year, will furnish cuttings in early spring. It is, indeed, better to cut them back, even if only for the purpose of making the remaining plants themselves more uniform and dwarf. The cuttings, if cut back to the old wood, will, if placed in a genial temperature, make good plants the same season; and the old plants, if kept near the glass and with the advantage of artificial heat, will break and form fine bushy material; they should, however, on no account be cut back unless they can receive the care described, as, if not thus treated, they are liable to die gradually away. In a cold house they fail to break again, owing to the torpidity of the root, which a low temperature induces. The cuttings should be inserted in 3-in. pots and placed upon a shelf in the full light; no shading or coddling of any kind is necessary. They will then root freely, and there will be no danger of damping.

Byfleet. J. Cornhill.

GARDEN BOTANY.

(*Continued from p.* 140.)

Gynœcium or Pistil.

Definition.—The gynœcium occupies the centre of the flower, and within it the seed or seeds are generated. It consists of a single body, as in Platystigma (fig. 442), and in the Sweet Pea, Lupin, Kidney Bean, &c.; or of several, often numerous, bodies, as in the Globe Flower (fig. 443), in the Buttercup, Clematis, Larkspur, &c. When there is only one body it may be composed of one carpellary leaf (carpel), as in the Pea family, or it may be built up of two (Wallflower), three (Violet), four (Willow-herb), five (Pelargonium), or many, as in Mallow. How to determine whether the body consists of a single carpel or several cohering together we shall presently learn. When there is only one body, and that made up of a single carpel, the gynœcium is apocarpous, as it also invariably is when it consists of two or more free bodies. When two or more carpels cohere to form the gynœcium or pistil, then it is syncarpous. Taking one of the bodies of an apocarpous pistil (of Clematis, for example, or the solitary one found in a Pea flower), we find in the young state, at least, that it consists of a basal enlarged portion, the ovary, containing the ovule or ovules (young seeds), attenuated upwards into a more or less slender style, which terminates in or bears somewhere on its surface a thicker cellular portion viscous at some stage of its existence. This is the stigma. The position of the gynœcium is assumed to be always central or terminating the floral axis, though we sometimes find that other parts of the flower appear to be seated on the top of the ovary. When this is the case, as in the Cucumber, Gooseberry, and Apple (fig. 444), the ovary is inferior. It results either from the adhesion of the calyx to the ovary, or from a cup-shaped expansion of the floral axis, so that it is lowest in the centre. Sometimes the ovary or ovaries are only apparently inferior, being enclosed in a tubular calyx or floral axis, but free from its sides, as in Roses, Corn Cockle, &c. When the ovary is above and free from the calyx

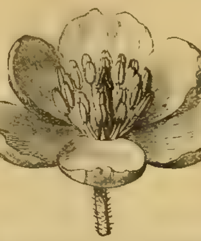


Fig. 442.—Flower of Platystigma; pistil consisting of one body.

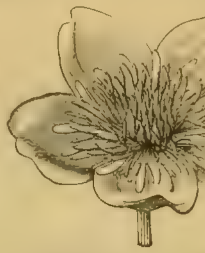


Fig. 443.—Flower of Globe-flower (Trollius); pistil consisting of several bodies.

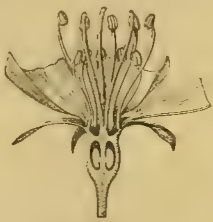


Fig. 444.—Section of Apple flower, showing the inferior ovary.

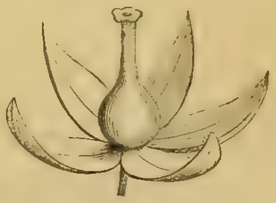


Fig. 445.—Calyx and ovary of Pimpernel, showing the superior ovary.

it is superior, as in the Tomato, Cherry, Grape, and Pimpernel (fig. 445).

Apocarpous Pistils.—We have already shown that when the gynœcium or pistil consists of a single body it may be either apocarpous or syncarpous, but when it consists of several or numerous separate bodies it is invariably the former; that is to say, when the gynœcium of a flower comprises several distinct free bodies, as in the Buttercup, Columbine, &c., each body always consists of a single carpel; consequently, the whole is apocarpous. There are many varieties of the apocarpous pistil; and when it consists of a single body it can usually be distinguished by its stigma being simple (not divided or lobed), as in the Kidney Bean (fig. 446) and all the large family to which it belongs, or, failing this, by the insertion of the ovule o ovules, or by the oblique shape of the ovary itself. The ovary contains several ovules in the Pea and Bean attached along one side, but in the apocarpous pistil of the Barberry (fig. 448) they are inserted in the base of the ovary, the style is very short and thick, and the stigma expanded into a circular disk or what is termed capitate. In the Stinging Nettle (fig. 447) there is a solitary basal ovule, and the tufted stigma is sessile. Apocarpous pistils consisting of more than one carpel have only one ovule in each ovary, as in the Buttercup and Strawberry (fig. 449), or several, as in the Larkspur and Spiræa (fig. 450).* Apocarpous pistils are always superior.

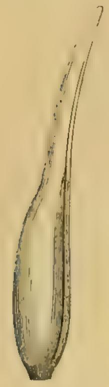


Fig. 446.—Apocarpous pistil of Kidney Bean.

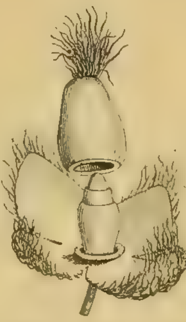


Fig. 447.—Apocarpous pistil of Nettle, with a single ovule in the ovary.

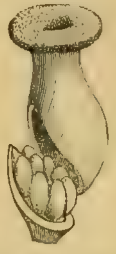


Fig. 448. — Apocarpous pistil of Barberry, the upper part removed, showing several ovules in the ovary.

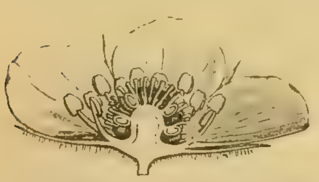


Fig. 449.—Flower of Strawberry in section, showing some of the carpels of the apocarpous pistil, the ovary of each carpel containing a single ovule.

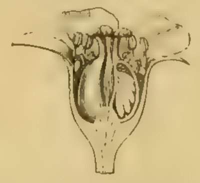


Fig. 450.—Section of a flower of Spiræa, showing some of the carpels of the apocarpous pistil, the ovary of each carpel containing several ovules.

Syncarpous Pistils.—These always have only one ovary, which is built up of two or more carpels, and the edges of the carpels simply meet in the circumference of the ovary, thus forming only one cavity or cell (fig. 451); or they are turned inwards, meeting in the centre, thus forming as many cells as there are carpels constituting the pistil (fig. 452). There are numerous other modifications of both apocarpous and syncarpous pistils, but it is unnecessary to particularise them in this paragraph, because the figures illustrating the insertion of the ovules, &c., show many of them, and no further explanation is required.

Styles.—The presence or absence (see fig. 447) of a style or styles in syncarpous pistils, their degree of separation or union, their shape, and the part of the ovary from which they proceed are some of the chief points for our consideration under this head. In by far the larger number of syncarpous pistils the styles cohere in a single column throughout their whole length (for example, Fuchsia, Lily, Azalea, &c.), and these confluent styles are often described collectively as the style in the singular, although the lobes of the stigma, and sometimes also the cells of the ovary, plainly enough indicate that there is a fusion of several styles. When the union is complete there is little objection to this in descriptive botany, because it saves several words in a description, and it is not misleading. The style,

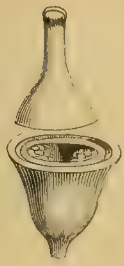


Fig. 451.—Syncarpous pistil of Saxifrage, with a one-celled ovary.

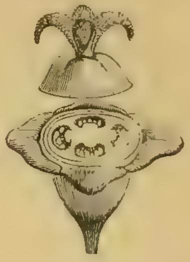


Fig. 452.—Section of Syncarpous pistil of Mesembryanthemum, showing the four-celled ovary.

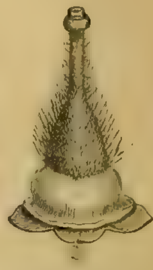


Fig. 453.—Pistil of Trichilia spondioides; styles united throughout their entire length.

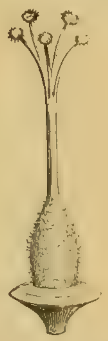


Fig. 454.—Pistil of Chailletia pedunculata; styles free towards the top only.

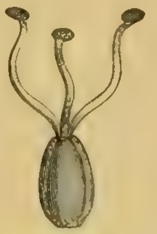


Fig. 455.—Pistil of Erythroxylon coca; styles free to the base.

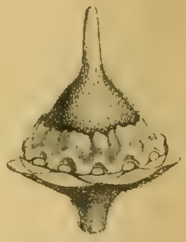


Fig. 456.—Pistil of Balanites ægyptiaca, with a terminal style.

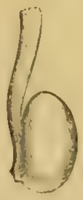


Fig. 457.—A single carpel of Strawberry, with a lateral style.

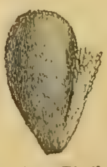


Fig. 458.—Pistil of Soridium Sprucei, with basal style.

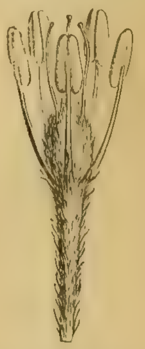


Fig. 459. — Stamens and pistil of Malesherbia, the three distinct styles arising below the summit of the ovary.

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* In some botanical works, both English and foreign, each separate carpel of an apocarpous gynœcium is termed a pistil, as well as the combined carpels of a syncarpous one, but in most modern English works pistil is employed in the same sense as gynœcium. The term pistil has also been restricted to the style.

then, using the word in the sense just explained, of a Fuchsia, Lily, &c., is usually very long and slender, whereas in Trichilia (fig. 453) the ovary tapers gradually into a short style. The styles of Mallow are numerous and free from each other in the upper part only, as likewise are the five styles of Chailletia (fig. 454), whilst in Erythroxylon (fig. 455) they are free down to the ovary. A more familiar example of the latter condition is offered by Thrift (Armeria vulgaris), in which, however, the number is five. With regard to the position of the style or styles on the ovary it is usually terminal (fig. 456), but in the Strawberry (fig. 457) it proceeds from the side, and in Soridium (fig. 458) from the base of the ovary. Malesherbia (fig. 459) has three distinct styles, which, instead of being clustered together at the summit of the ovary, as in most plants, arise from distant points below its summit. Two families, the Labiatæ (for example, Salvia and Stachys) and Boragineæ (for example, Myosotis and Omphalodes), are characterised by having a deeply four-lobed ovary with the style arising from the centre between the lobes (see figs. 460 and 461). The style is then gynobasic, that is, springing from the centre and base of the carpels forming the ovary. The same thing occurs in Limnanthes Douglasi and in the genus Gaudichaudia. Generally speaking, the style withers and falls off soon after fertilisation has taken place, but in many of the Ranunculaceæ (Buttercup family) the styles persist, harden, and grow out considerably after the fall of the floral envelopes. The feathery styles of Anemone and many species of Clematis are good examples of this, as well as the spreading, hardened styles of Nigella. In the genus Martynia the styles grow out into formidable sharp woody hooks or beaks. There is little striking variety in the shape of the style. Perhaps the most remarkable is that of the Sarracenias, which is umbrella-shaped. A similar kind of style characterises the genus Aspidistra.

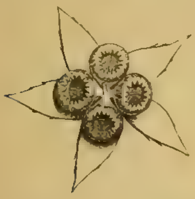
Fig. 460.—Calyx and pistil of a Boraginea, to show the position of the style.

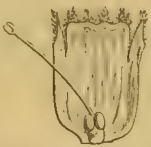
Fig. 461.—Style of Thymus patavinus arising from between the lobes of the ovary (gynobasic).

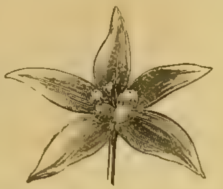
Fig. 462.—Calyx and pistil of Limnanthes Douglasi, to show gynobasic style.

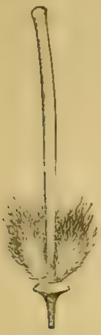
Fig. 463.—Pistil of Gaudichaudia, showing the gynobasic style.

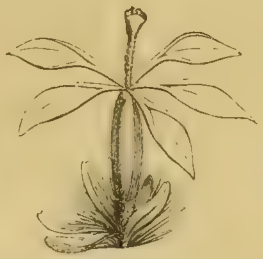
Fig. 464.—Flower of Goodenia.

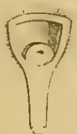
Fig. 465.—Section of the stigma of Goodenia

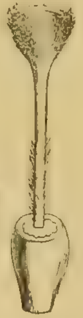
Fig. 466.—Enlarged stigma of Goodenia.

The Stigma.—As already explained, the stigma is the papillose or glandular part of the style, which is humid or viscid at some stage, that is to say, when it is ready to receive the pollen, for it is through the stigma that the pollen penetrates to the ovules in the ovary. This process is more fully described under another head. Strictly speaking, only that part, or parts, of the style capable of receiving the pollen is stigmatic, and in some modifications of the style it is not unusual to describe the stigmatic surface of the style, as it is difficult to separate the two. In Iris, for instance, the styles are petaloid and arched over the stamens with only a narrow line of stigmatic surface on the under side, but it is usual to describe the stigmas as petaloid. The stigma of the Goodenovieæ (Goodenia, Leschenaultia, &c.) is very singular, the apex of the style being cup-shaped or two-lipped, and the stigmatic surface covered with a membrane. In the Poppy (fig. 467) the stigmas are sessile in lines radiating from the centre of the apex of the ovary, the number of lines corresponding to the number of carpellary leaves forming the ovary. Argemone (fig. 468), a member of the same family as the Poppy, has three sessile stigmas. One considerable family, the Guttiferæ (for example, Clusia and Garcinia) is characterised by having almost sessile stigmas with free, radiating arms, or all the branches united in a single peltate stigma. Sometimes the stigmatic surface is exceedingly small, the style tapering upwards to a point with a stigmatic tip. This is the case in numerous Leguminosæ. Very commonly the apex of the style has a knob-like expansion, as in the Primrose family, when the stigma is capitate (fig. 469). Water Lilies have a remarkably large stigmatic surface. There seems to be no direct relation between the extent of the stigmatic surface and the number of seeds normally produced.

W. B. Hemsley.

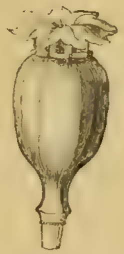
Fig. 467.—Pistil of Poppy, showing the sessile radiating stigmas.

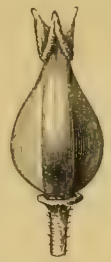
Fig. 468.—Pistil of Argemone, showing the three sessile stigmas.

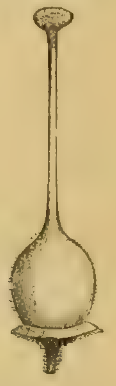
Fig. 469. — Pistil of Primrose, with capitate stigma.

Early Opening of Kew Gardens.—Sir Trevor Lawrence, M.P., has addressed a note to Mr. Colman, honorary secretary of the committee for obtaining an earlier opening of Kew Gardens, to the following effect: "I have been reluctantly compelled to surrender all hope of obtaining this session a satisfactory opportunity of bringing on my motion for the earlier opening of Kew Gardens. Some of the friends who promised me their support have already left town, and many others will leave at the end of this week. A small vote like that for the royal parks, &c., will be taken at any moment, without affording me a fair opportunity of raising the question contained in my motion. No doubt you saw the explanation I gave in the House of Commons on July 15 of the circumstances under which I lost my opportunity of bringing on my motion on June 7. I greatly regret that I was induced to withdraw it on that day; but I fully relied on the distinct promise made me by the Secretary of the Treasury that he would give me an equally good opportunity on June 13, after the Whitsuntide recess. The Director's Report for 1877, lately issued, refers to the earlier opening question. I could hardly have believed that it could be seriously argued that mowing, sweeping, and rolling, which is really all the work to be done in the 'pleasure grounds,' would be interfered with if they were opened at 10 a.m. The 'constant improvement and development,' the 'laying out' and 'planting new collections,' the 'verification, examination, and rearrangement of old ones,' form a string of phrases intended to create an impression that a great scientific work is being constantly carried on in the 'pleasure grounds.' Such an impression would be entirely erroneous. Let any one of ordinary common sense visit the Gardens and judge for himself. From my communications with the First Commissioner I do not understand him to attach weight to any of the arguments urged against opening the 'pleasure grounds' at 10 a.m., except that of increased cost. As to this, I am informed by the police that but a very small increase of expenditure would be necessary. I am glad to tell you that I received a full and detailed report from the police as to the conduct of the many thousands of visitors on Whitsun Monday, and that it was in all respects eminently satisfactory; it as fully corroborated the opinion I formed on the spot of the behaviour of the people as it disposed of grave charges of misconduct which were, I regret to say, brought against them, but not openly. It only remains for me to say that I consider myself pledged to raise the early opening question next session on the first favourable opportunity."

GARDENING FOR THE WEEK.

Indoor Plant Department.

Conservatory.—The deficiency of blooming plants in conservatories at present may be compensated by a liberal admixture of such plants as Dracænas and Coleus. Of the former take such kinds as Cooperi, ferrea, and terminalis; the bright markings of their leaves will supply the place of flowers, and the plants will not receive injury for the next two months by being placed in a house without fire-heat; neither will they suffer so much as flowering plants would by standing somewhat closely, the greater amount of air and lower temperature of the house, compared with the stove where they have grown, having the effect of stopping them from making much growth whilst in the conservatory. The different varieties of Coleus should be placed so as to get as much light as possible, otherwise they become drawn and have an unsightly appearance. The old Plumbago capensis is another useful plant for this time of the year, not grown nearly so much as it deserves to be. The present is a good time to propagate it. The small half-ripe side shoots will strike freely inserted in small pots under bell-glasses in a little heat. These, when struck, should be encouraged to make growth before the autumn gets too far advanced. They should be wintered in a temperature of 45° or 50°. In the spring they should be headed down and potted in 6-in. or 8-in. pots, using good fibrous loam. If desired, some may be grown on in larger pots, but for general decoration they are more useful in a comparatively small state. The plants will last for years by cutting them back in the spring just before they commence growth and when they have broken, replacing a portion of the old soil with new material, returning them to the same or a size larger pot. Fuchsias should have their seed-pods picked off regularly, or they soon cease to flower freely; they ought to be supplied twice a week with weak manure water. Double Petunias are very useful at this season, either as decorative plants or for furnishing cut flowers. These should receive regular attention in the way of stopping and tying, to induce them to break back, or, from their quick, somewhat straggling habit of growth, they become unsightly. Lilium auratum is a most useful subject for conservatory decoration at this season, but should not be introduced in too great numbers at a time, as its perfume, being so powerful, is oppressive. Attend well to the different varieties of Lilium lancifolium, by keeping them neatly tied out, and supplying them regularly two or three times a week with manure water, otherwise the soil becomes exhausted, and they lose their bottom leaves, which destroys half the beauty of the plants. They must on no account be allowed, at this season especially, to suffer from want of water, even for ever so short a time, or the same mishap will follow.

Eucharis amazonica.—Valuable as this is at any season, it is never more welcome than during the autumn and winter months, a time of year when such choice blooms are doubly appreciated. Fortunately, they may be had at that season almost as readily as at any other, provided there be the necessary convenience for growing them and a good stock of plants to work with. Where this is the case, a portion of the plants should be always resting and others coming on in different stages, so as to keep up a constant succession of flowers for cutting or other purposes. Those intended for blooming during October, November, and December, should now be at rest in a cool house or pit, where they have only had just sufficient water afforded them to keep the leaves alive and fresh. If a portion of these be transferred into brisk hothouse heat and kept well supplied with tepid water, they will soon commence to throw up their flower-spikes, and when these are cut the plants should be grown on for a time before they are again put to rest. Owing to the rapid way in which the bulbs increase in number, frequent division and re-potting are necessary in order to renew the soil and make a separation of the large flowering roots from those of smaller size, which can either be discarded or kept for stock. The soil that suits them best is rough lumps of peat, leaf-soil, and a sprinkling of rotten manure, to which should be added sufficient sand to keep the whole porous and open, so that the water may pass freely through. To aid this the pots must be thoroughly well drained by placing at least 2 in. of crocks in them, over which some half-rotten leaves should be scattered, to prevent the finer soil from running amongst them and filling the interstices. Water somewhat sparingly for the first week or two till they get fresh hold of the soil, and then gradually increase the supply as the pots fill with roots, after which, if the heat be sufficient, they can scarcely have too much, either at the roots or overhead, where a good syringing is always acceptable. Pancratiums, such as P. fragrans and P. rotatum, are almost equally valuable, and may be had in bloom at different periods of the year by growing on and resting a portion of the stock in succession. These delight in a soil composed principally of fibrous loam, enriched with some mild manure, such as sheep droppings that have been laid aside for a time.

Achimenes.—These should have every attention as they go out of bloom to assist them in forming and ripening their tubers; the best place in which to treat them at this season for that purpose is a pit or frame where they can be kept moderately close and shaded, in addition to which they should be freely syringed overhead that the leaves may be maintained in a fresh, healthy condition. Achimenes are too frequently stowed away directly they cease flowering or become the least shabby, and water entirely withheld from them, a course of treatment the reverse of what they require, as it is just at that time assistance is needed in rendering the drying-off process gradual and natural. By affording the first batch a little extra attention they will form an abundance of fine, large tubers, superior in every way to any that can be obtained from those now coming on, which may therefore be discarded as soon as they have discontinued blooming.

Gesneras, such as cinnabarina, exoniensis, and zebrina, are among the most useful autumn and winter-blooming plants, independently of which the great beauty of their rich velvety-looking leaves makes them quite worth growing for decorative purposes. They require a rich, vegetable soil, such as leaf-mould and peat, which may be used in the proportion of two-thirds of the former to one of the latter, or the peat may be substituted by adding a less quantity of rough fibry loam. This must be kept free and open by using some sharp, clear sand, in order that the great quantity of water they require while making their growth may pass readily through. In re-potting any of these, see that the old ball is not disturbed any more than is necessary for the purpose of removing the crocks, as most of the fibre they make will be found clinging around the insides of the pots.

Imported Orchids.—The immense quantity of Orchids now imported points to one of two things, either that great numbers are, subsequent to their introduction, killed, or that their cultivation is largely on the increase. Possibly to both these causes may be attributed the continuous demand; but, although many of the more popular and useful species can now be obtained for much less than the prices they once realised, still there is no doubt very great quantities are destroyed by injudicious treatment during the first efforts the plants make in growth after the severe ordeal they pass through from the time they are gathered in their native habitats until they reach the hands of the grower in this country. There is one thing to be said in favour of imported plants, that although weakened by packing and transit, still they are free from disease such as is often met with in plants that have been for a considerable time in the country. Hence it is often more advisable for those commencing to form a collection to confine themselves in a great measure to imported plants rather than depend upon such as have been long under cultivation, however superior the latter may appear to be. A few words as to the treatment of imported plants may not be out of place to those who have had but a limited experience of them. First, as to the cooler section, such as come from the Brazils and the warm as well as cooler regions of continental America, and which, in a great measure, consist of species forming pseudo-bulbs. It may be observed that generally the larger the masses are when brought over the more likely they are to get fully established in a comparatively short space of time, for, although Orchids that form these pseudo-bulbs will bear partition or division to an extent that few other plants will, there is no doubt that the larger the masses are up to a reasonable size when in this country first placed under conditions calculated to excite them into growth, the sooner they get established. On the other hand, though almost every pseudo-bulb (when the plants are so far divided as to separate the masses into two or three or even a single stout pseudo-bulb) will make growth, supposing that each possesses a healthy dormant eye, still, the first growth made from these small detached pieces will, under the best treatment, be comparatively weak and small proportionate to the extent to which this sub-division has been carried; therefore, I would by no means advise beginners intending to cultivate the plants for purposes usual with private growers to divide newly imported Orchids into small pieces. It is necessary to allude to this, inasmuch as I have frequently met with young hands in their cultivation who look upon a small bit of an Orchid when healthy and prepared to start into growth much in the same way they would a cutting of any easily propagated plant possessing the free growth and recuperative powers that enable them in a short time to attain size and vigour equal to the specimen which the cutting was taken from, and which Orchids, from their naturally slow growth, are wholly incapable of, as is evident from the fact that when such subjects as Cattleyas, Odontoglossums, Oncidiums, Burlingtonias, Anguloas, Barkerias, Brassias, Cœlogynes, Chysis, Epidendrums, Stanhopeas, Lælias, Lycastes, and all plants of similar habit are divided into small pieces, it takes several years to induce the sub-divided pieces to form a single bulb fully up to their natural size. With all such plants I have found it better, after being newly imported, to grow them on for about a couple of years in considerable masses, and then, if deemed more advisable to increase their number at a sacrifice of individual size, to divide them; in a couple of years after this the pieces so separated will be much larger and stronger than they would if divided when first imported. Neither is this to be wondered at, as the weakening influences they have been subject to during their transmission from the collector to the grower are very much increased when subjected to dividing into small pieces before they had time to recover. When first unpacked, the whole leaves and bulbs should be carefully sponged, so as to free them from all dirt or insects, and any decayed portions should be cut away.

Heat to which Newly-imported Orchids should be Subjected.—The treatment as to temperature the plants should first receive at the hands of the grower ought to a certain extent be more regulated by the condition they are in when they arrive than by the country they have come from, as if in a weak state if subjected at first to a temperature that will excite them other than very slowly, the chances are that they either perish at once or make a spasmodic attempt at growth, and die before they mature it or form sufficient new roots to support it. Even with plants in the best condition when imported, the first growth induced should be gradual and slow. If the plants arrive late in the spring, summer, or autumn, the temperature of a cool house without any fire-heat will be sufficient for the species already named.

Light for Orchids.—If, as is often the case with plants like Cattleyas, Lælias, and Odontoglossums, an attempt at growth has been made during the transit, this will necessarily be weak and quite blanched, necessitating their being very gradually exposed to light, otherwise the partial growth thus begun will be almost certain to go off, which is so much lost at the expense of the stored-up strength in the plants; consequently, it is requisite that the house, pit, or portion of either they occupy should, until growth is fairly commenced, be somewhat more shaded than would be advisable for established plants; in addition to which a little extra shade, such as that afforded by white paper laid immediately over them on the shelves they occupy, will be of benefit.

Air and Moisture.—With most species some slight moisture-holding material, such as a little Sphagnum, shell gravel, or the like, laid upon the shelves or stage they are on, kept a little damp, but not wet, will assist the development of growth more safely than the direct application of much water. The atmosphere should be kept closer than that of an ordinary greenhouse, but not so confined as would be advisable during the growing season with well-established plants.

Potting Orchids.—When a little progress in growth has been made, and a disposition to form roots is apparent, the plants should be potted, using very great care not to injure the young roots. Two or three sticks ought to be inserted in the pots, to which tie the plants in a way to make them quite secure so that they cannot move, otherwise the young rootlets, before they get well hold of the potting material, are sure to get damaged. Where fossil Oak is to be had I prefer at once, before any roots are formed, tying the plants to small pieces of this with a little bit of Sphagnum attached, but not enough to hold much water; to it the roots, as soon as they are made, will cling. The advantage in the use of this fossil wood is that it affords something at once for the roots to adhere to that, from its non-perishable nature, is suited to them, and when once they have fastened to it the whole can be transferred to the pots and secured better than by tying to sticks. Where Orchids, when first imported, are thus tied to material of this description, which is the best, or any of the more common kinds of wood used, many growers suspend them head downwards for a time in the house or pit in which they are started. This prevents too much moisture accumulating about them, and is, so far, a safeguard, for, over-much moisture in any shape, above all things, must be avoided until they have attained some strength. As growth proceeds they will gradually bear subjecting to ordinary treatment found best suited to their respective kinds, but on no account should they be hurried, or after their first growth is completed submitted to that severe drying ordeal which fully-established plants by some growers are subjected to.—T. Baines.

Indoor Fruit Department.

Pines.—As soon as these are cut in any of the pits get the latter thoroughly washed, cleaned, and repaired, the woodwork painted, and the walls lime-washed. The heating apparatus should likewise be seen to and all got into good working order. Remove such suckers as are good and strong as soon as they are ready for separation, with a heel of the old wood attached to them if practicable; pot them at once, and start them in a kindly temperature. Crowns, as a rule, should be avoided, unless for the perpetuation of new or scarce sorts, and then only those from first-class fruits ought to be chosen. No matter at what season suckers are ready, they should be potted. Shift all plants that require it, shade them, and keep them a little close for a time, and dew them overhead with tepid water through a fine rose or syringe at shutting-up time. Those intended for early summer fruiting should now have their pots well filled with roots, and should be kept moderately dry, but at no season of the year absolutely so. Such plants as are about to throw up their fruits enjoy a good growing temperature and a kindly bottom-heat, and for this purpose fresh linings and plunging may be necessary.

Vines.—Remove the lights if practicable from the earliest Vineries in which all the wood is thoroughly well ripened and the fruit cut, and paint and repair the house. Where Grapes are now ripe and hanging, precaution should be taken against the ravages of wasps and other depredators, either by placing the clusters in little muslin bags, or, if convenient, covering over all openings for ventilation with sheets of tiffany, hexagon netting, or frigi domo. A somewhat dry atmosphere is necessary where Grapes are ripe and colouring, but still guard against too much aridity. In late Vineries where the berries are swelling, give air night and day, and maintain an equal temperature by means of a little fire-heat, which dispels stagnant damp in dull weather and renders the atmosphere sweet and healthy; give also abundance of water, and sometimes manure water to the borders, and liberally damp all paths, walls, and floors during the day, otherwise shrivelling soon sets in, and red spider makes its appearance. The earliest pot Vines will now have their canes well browned off and thoroughly matured, and as soon as this is the case they may be turned out-of-doors and set in well sheltered places where their rods can be kept erect. Turn the pots on their sides when it rains heavily. Other pot Vines may be kept in a growing condition until they are ripe, when they should be treated like the earliest ones.

Peaches and Nectarines.—In order to give late fruits every chance of ripening properly, fully expose them to the influence of the sun. Trim out all shoots not required for next year's work, so as to thoroughly ripen those retained. Where the fruit has been gathered, and the wood is well matured, ventilate the houses as much as possible night and day, and syringe with a solution of sulphur for the eradication of red spider, and use some dissolved soft-soap or Gishurst's Compound in the water when syringing for the destruction of scale. Keep the borders moderately moist, for drought under any circumstances is exceedingly deleterious to the trees.

Figs.—The second general crop of these will now be ripening, and consequently the atmosphere should be kept a little drier than usual, and the house more freely ventilated so as to improve the quality of the Figs. Trees swelling their fruits must be liberally fed and syringed, and scale and other vermin eradicated.

Melons.—Prevent over-luxuriance by means of kindly treatment and a little ventilation at night as well as during the day, in preference to stinting the supply of moisture and pinching severely. However, their growth must be regulated and held in check, and attention must be paid to the fertilisation of the blooms. To those whose fruits are swelling, give heavy applications of water, and occasionally some liquid manure.

Cucumbers.—The plants for winter fruiting should now be sown, and cuttings struck from present fruiters to succeed them. Wornout plants may now be cut in rather severely, and the borders mulched and well watered, and the linings renewed; the plants soon make a fresh start and bear well for some time yet. Attend to the usual routine of thinning the leaves, shoots, and fruits whilst in a young state.

Hardy Fruit.

It is now time that all summer pruning and stopping of shoots should be finished, as there is now no danger of the trees making growth, to be in any way detrimental to the formation and full development of fruit-buds for next season. Any such work still to be done should be completed as soon as possible, after which the shoots should be neatly laid, or tied in, and the ripening fruit be exposed to the influence of sun and air, by having the foliage drawn on one side, or, if need be, removed altogether, but this should only be done when the leaves cover the fruit, and so hinder its colouring properly. Should the summer continue hot and dry, watering will be a serious item of garden labour, as it is from this date to the end of September that fruit trees require most water. If that should be scarce, mulch deeply with litter or Grass. Gather Apricots, Peaches, and Nectarines a day or two before they are intended to be used, and before the sun touches them in the morning; they will then keep for several days in a cool room, and be all the better for it; of course they should be laid on some soft substance, such as dry Moss or wadding. Early kinds of Pears, such as Citron des Carmes, Belle de Bruxelles, and Jargonelle, are now sufficiently ripe to gather; it is not well to allow them to fully ripen on the trees, as then the flavour is not nearly so good, and the fruit soon decays. Let all runners required for forcing and new plantations of Strawberries be taken off as early as possible, in order that the beds may be cleared of runners and bad foliage, after which slightly point over between the rows, and give a fresh mulching of rotten manure. Water freely all newly-planted beds, to get growth completed by the end of September. A nursery bed of runners should be kept on hand to make good any failure that may occur.

Kitchen Garden.

August, like March, is a month of sowing and transplanting. If the weather be dry, then the seeds require moisture; and in order to best ensure it, let the ground be deeply dug, levelled, and rolled, and sown with as much expedition as possible, so as to prevent it from parting with its moisture; a mat or some litter placed over it until the seeds begin to germinate will also be found useful in periods of drought. The hoe should be in constant use, and all weeds and vegetable refuse should be collected into a heap, where, by mixing it with lime and by means of frequent turnings, insect life, and also that of the seeds of weeds, may be destroyed and decomposition accelerated. Hoeing and surface-stirring should be rigorously persevered in, and slugs and insects should be kept in check by means of dressings of soot and lime. Never permit vegetables to run to seed, unless required for that purpose, and then they should have a place set apart for them. Manure well and trench every spare piece of ground, which if uncropped should be ridged. In dry weather abundantly water all kinds of crops that will be removed before winter, but to such as remain during that season water should be very judiciously applied, as too much induces soft growth liable to be destroyed by frost.

Endive and Lettuce.—Ground should now be prepared for the principal crop of Endive and autumn Lettuce; for these it ought to be well manured and in a moderately dry position. Do not overcrowd the plants, especially Endive. It is no uncommon practice to plant these so close that there is not room to step between the rows to tie them up; planted thus thickly, the hoe cannot be used amongst them to loosen the soil and keep down weeds. The rows of Endive should be 15 in. or 18 in. apart, according to the condition of the soil, giving the most room where the growth is likely to be strongest. Lettuce, especially where the small Cabbage varieties (such as Tom Thumb) are planted, need not have so much room. More Endive should now be sown. For general use the Green Curled is most esteemed, but where the Broad-leaved Batavian is liked a pinch of each should be put in. Do not sow the seeds too thickly; they are little liable to the attacks of birds or insects, and usually almost every seed vegetates. Previous sowings that are already up, if too thick, should be thinned out sufficiently to allow them room, or they get drawn up so weakly as to be long in getting hold when planted out. Some Lettuce—Tom Thumb, Black-seeded Bath Cos, and likewise the hardy Hammersmith—should also be now sown; the last-named sort is not equal in quality to the Cos varieties, but in many places it will stand the winter where other kinds would fail.

Ridge Cucumbers and Vegetable Marrows must be plentifully supplied with water, or they cannot possibly keep on bearing. It should be given in quantity sufficient to reach as far as the roots extend.

Onions.—These are this season more than usually late, but in many cases very small and much affected with the maggot. As soon as they show signs of completing growth they should at once be pulled up, or they will commence to make fresh roots, which injures their keeping properties. They are all the better for being dried quickly. Where a moderate quantity only is grown that can be dealt with in this way, the old method of spreading them thinly on a slate or tile roof has the advantage that if much wet weather should follow immediately upon their being drawn they are not so liable to root afresh as if laid on the bed to dry; or the simple plan may be followed of tying them in bunches of eight or ten immediately they are pulled and hanging them up on the outside walls of a building that has an overhanging eave sufficient to throw off the rains; the north side is the best for keeping them late in the spring, as there they have not the disposition to grow so early. Shallots, if not already taken up, should be at once removed to a dry place and kept there.

Box Edging that was not cut in the spring should be gone over now, for if the cutting be deferred until later in the autumn it often suffers through frost, whereas if the work be done now the danger of this is avoided.

Extracts from my Diary.

August 19.—Sowing Early White Naples, White Tripoli, and Giant Rocca Onions for spring and summer use. Putting in Santolina cuttings under hand-lights in sharp sandy soil in a shady situation. Earthing up Celery and Cardoons whilst the plants are perfectly dry. Putting a little fresh soil on the roots of newly-planted Cucumbers and Melons. Salting gravel walks in order to kill weeds. Watering all newly-planted trees and shrubs that are likely to suffer from drought; also Celery, Carrots, Turnips, and Radishes.

Aug. 20.—Planting Antirrhinums and Sweet Williams; also Lettuce and Endive in good rich soil. Potting Cinerarias; also small Dracænas for table decoration. Pruning and nailing Rose trees on walls. Heavily manuring and trenching a large piece of ground previously occupied by Raspberries in which to plant Strawberries. Removing all overgrown heads from Globe Artichokes to prevent them weakening the plants. Watering newly-made Asparagus beds with liquid manure; also Pines, Celery, Scarlet Runners, Beans, Lettuce, and Endive.

Aug. 21.—Sowing Walcheren, Early London, Large Asiatic, and Autumn Giant Cauliflowers on well-prepared borders for spring and summer use. Taking up sorts of Potatoes in the following order: Snowflake, Porter's Exclsior, Ashtop Fluke, Scilly Red, King of the Potatoes, Hundredfold Fluke, Yorkshire Hero, Breadfruit, Lady Paget, Perfection Kidney, Model, Rector of Woodstock, Fenn's Bountiful, Fenn's Early Market, Magnum Bonum, Blanchard, Favourite, and Red-skin Flourball. Watering Vine borders.

Aug. 22.—Sowing Red and White Turnip Radishes on moist soil. Putting in a batch of Pelargonium cuttings for border use. Sorting over Potatoes, and placing those intended for seed in shallow boxes. Making new gravel walks. Cleaning and weeding shrubbery and Ivy banks in the pleasure ground. Watering Pines with soot water; also the Peach house border.

Aug. 23.—Cleaning out Melon pit, turning and well watering the soil, and planting it with Osborn's Forcing French Beans. Pruning pyramid Apple and Pear trees. Nailing and tying Peach trees. Earthing up Celery and Leeks. Gathering Plums, Jargonelle Pears, and a few Tomatoes.

Aug. 24.—Potting Cyclamens. Planting Lettuce and Endive. Looking over Vines, and taking off laterals and any decayed berries. Stopping shoots of Melons and Cucumbers. Hoeing surface soil between all growing crops. Cleaning and weeding gravel walks.—W. G. P., *Dorset.*

Balm of Gilead.—Dr. De Hass gives the following particulars as to this far-famed specific for all diseases: The name of Gilead was sometimes applied to all trans-Jordanic Palestine; properly, however, it only included the country east of the Jordan from the head of the Dead Sea to the foot of the Lake Genesareth, of which Mizpeh Gilead was the crowning point. It was here, along the Jordan and about Jericho, the balsam or balm once so highly prized was procured from an aromatic tree, supposed still to be found in this region, and known as Spina Christi, or tree from which the Saviour's Crown of Thorns was woven. This most precious gum was obtained by making an incision in the bark of the tree; it also oozed from the leaves, and sometimes hung in drops like honey from the branches. The tree, which originally was found in Palestine, was transplanted to Egypt by Cleopatra, to whom the groves near Jericho were presented by Marc Antony. The shrub was afterwards taken to Arabia and grown in the neighbourhood of Mecca, whence the balsam is now exported to Europe and America, not as Balm from Gilead, but Balsam of Mecca. The gardens round Heliopolis and the "Fountain of the Sun," in Egypt, no longer produce this rare plant, and it has long since ceased to be an article of export from Gilead.

THE PEDIGREE OF THE WATERING-POT.

The application of water to growing plants, in one form or another, would seem to be coeval with horticulture itself. The importance of plentiful supplies of water for this purpose is constantly brought before our notice in the oldest books we possess, in which there are numerous passages showing that water springs, dew, and rain were looked upon as the most valuable of earthly gifts; hence the frequent allusion to them in a metaphorical sense as types of the most precious of terrestrial and celestial blessings. The author of the book of Deuteronomy, whose style is singularly poetical, even for a Hebrew, gives us a charming picture of what he describes as a "good land of brooks, and of waters, and of fountains in the plains and the hills, of which deep rivers break out. A land of Wheat and Barley and Vineyards, wherein Fig trees and Pomegranates and Oliveyards grow: a land of oil and honey." It would be needless to multiply quotations, either from sacred or profane ancient authors, from all of whom we learn, over and over again, that the only way of supplying water to plants parched by the heat of the sun was from natural springs or artificial wells, the water being distributed over the soil by means of buckets or pitchers, of whose precise form we are ignorant. The ordinary vessels, great or small, which were used in the household were, no doubt, employed at first; but watering-pots, in the modern sense of the word, are a comparatively modern innovation. Old Adam Littleton, one of our earliest Anglo-Latin lexicographers, tells us that the Romans had a special word, "harpagium," which signifies watering-pot, as distinguished from "hydria," which meant an ordinary pitcher for holding water, and not for letting it out; but Alexander Aphrodisianus, a Greek writer who lived about the end of the second century, was the first to use the Greek word from which it is derived. This seems to prove that the watering-pot proper, in our sense of the word, must have been unknown to the Greeks and Romans. In any case the first specimen of a real watering-pot with which we are acquainted apparently belongs to the thirteenth or fourteenth century. In case 117 of the British Archæological collection in the British Museum there are three specimens of the earliest form of watering-pot, made of ordinary red earthenware, one of which is here figured (fig. 1). In shape they may be described as that of an elongated hemisphere, with a very narrow mouth, and a flat bottom pierced with a number of small holes, some of them being with handles and others without. The specimen shown in the figure is ornamented with horizontal white stripes, and is partly glazed. It will be seen from the description and figure that these vessels must, when used, have been plunged into water, lifted out with the thumb stopping the mouth, and carried to the required spot, where, on removing the thumb, the water was distributed over the plants through the holes in the bottom. At one time a contrivance in tin, constructed on similar principles, was used for watering shops and offices, and possibly may be so still in remote places. No doubt the "floures partie white and red," which the "faire Emelie," in Chaucer's "Knight's Tale," gathered "to make a sotel gerlond for hire heede," were watered, perhaps by herself, with some such appliance. Towards the beginning of the fourteenth century, however, a genius arose who may well be called the Newton, the Bacon—in fact, the James Watt—of watering. Old Fuller, in his "Worthies," tells us that the world knows nothing of its greatest men, so the name of this daring innovator has not descended to posterity. It evidently

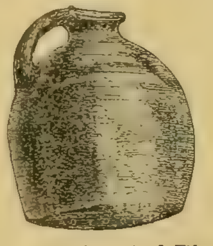
Fig. 1.—Watering-pot of Fifteenth Century.

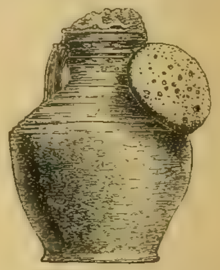
Fig. 2.—Watering-pot of Sixteenth Century.

struck this great inventor that if the perforated portion of the watering-pot were transferred from the bottom to the side there would be no need to use the thumb as a temporary stopper; he therefore produced, no doubt after much brain cudgelling, a watering-pot of the shape shown in fig. 2, which is unquestionably the lineal ancestor of our present appliance for local irrigation. The watering-pot in the cut was found, along with a number of others, in Moorfields, where there seems to have been a manufactory of them, and is a comparatively modern specimen, for Home, in his "Year Book," tells us that he remembers, when a boy, having seen a feeble widow in an almshouse tottering with one of these earthern vessels and dribbling the water over the plants in her little garden. Strangely enough, they were closed at the top, evidently for some unknown reason, for it would have been less trouble to have left them open; they filled, therefore, through the same holes that let out the water. The connection between this rude earthenware contrivance and the ordinary modern watering-pot can be seen at a glance.

The watering-pot shown in fig. 1 is about 9 in. in height and 8 in. broad at its greatest diameter, with a flat bottom, and is pierced with twenty-nine holes. That figured in the second cut was found at St. Katherine's Docks, at a depth of 30 ft., and belongs to the fifteenth century. It is 10 in. high and 8¾ in. in diameter. The paste of which it is made is red with a yellow surface, and a faint and partial green glaze. Specimens like those engraved are extremely scarce, there being only about twenty of them in all England. As the direct progenitors of a familiar garden utensil this brief account may be interesting to both our professional and amateur readers.

C. W. Quin.

ANSWERS TO CORRESPONDENTS.

Grubs and Pansies.—How can I kill grubs which are eating the roots of choice Pansies without, in so doing, causing injury to the plants? Is nicotine soap a remedy? [Remove the soil carefully from the plants with the fingers, and pick the grubs out by hand; then place some fresh soil round the plants in the place of that removed. Any mixture strong enough to kill the grubs would also injure the plants.—J. D.]

Preserving Rose Leaves.—What is the best way of preserving Rose leaves for keeping in a room for the sake of their perfume?—Subscriber, *Belfast*. [Pick as many Rose leaves as you can at one time; spread them upon a sheet of white paper in the shade, placed either on a gravel path or garden seat; turn them often, for the more rapidly they dry the better will be their perfume hereafter. The addition of some Sweet Woodruff greatly improves the scent.—P.]

Removing Carnations.—When can beds of Carnations which have been infested with Couch Grass be cleared of plants and trenched without injury to the plants lifted?—W. B. H. [The plants can be removed as soon as they have done flowering; if, however, it is intended to save seeds, wait till the seed pods ripen. If you intend to replant on the same ground, add rotten stable manure at the time of trenching, and, if possible, a layer of 3 in. of good loam on the surface before planting, meantime, laying the plants in a moist soil in a shady place.—J. D.]

Eradicating Bindweed.—In reply to "A. R. W." in last week's Garden (see p. 143), allow me to state that the least troublesome way of eradicating Bindweed is to crop the ground with subjects that will allow of the stems and leaves of the Bindweed that show above ground being removed every second Monday during the growing season. By perseverance in that system for a few years, the roots will cease to give much trouble.—B.

Scott's Favourite Lettuce (see p. 143).—The seed of this variety is black; therefore you have been supplied with the wrong sort. The true variety will stand the hottest and driest summers, and seldom "bolts" till too late in the season to ripen its seed.—S.

—— Allow us to state that Scott's Favourite Lettuce is black-seeded, and is identical with a well-known Continental variety.—James Carter & Co., High Holborn.

Strawberries for Clayey Soils.—Could you inform me what kind of Strawberry is most likely to succeed in a clay soil in the north of England?—H. [The varieties of Strawberries most likely to succeed in the north of England under any conditions are Vicomtesse Héricart de Thury (or Duc de Malakoff, as it is called in Lancashire), Underhill's Sir Harry, Auguste Nicaise, President, and Sir Charles Napier. Given one variety only, there is nothing to equal the Vicomtesse, next to which I would place Underhill's Sir Harry and Auguste Nicaise.—W. H.]

Light-coloured Evergreen Shrubs.—The best with which I am acquainted is the Japanese Griselinia littoralis, with very ornamental bright apple-green leaves, and of rapid growth and compact habit. Berberis Beali has very handsome light-coloured foliage, inclining to yellow. Pittosporum Tobira (bright green) and P. Eugenioides (very pale ashy-green) are quite hardy near the sea.—Salmoniceps.

—— Of hardy yellowish-green foliaged plants there seems to be very few besides those mentioned at p. 143, and the green colour of all is very much modified by the soils in which they are cultivated. In a general way, the following are of the shade desired, viz., Griselinia littoralis, Skimmia oblata, Viburnum Sieboldi, Choisya ternata, and Cerasus Laurocerasus rotundifolia (or round-leaved Laurel). Libocedrus chilensis is also of this colour, but its foliage is not bold.—Geo. Syme.

Grapes Diseased through Non-fertilization.—Can you give me any information why my Lady Downes Grapes go off in the way in which you see them? They are grown in a house with Black Hamburghs and get the same treatment, yet I have lost half of the crop by the berries becoming discoloured as if scalded, and Muscats of Alexandria grown in another house go off in the same way, while Black Hamburghs do very well.—F. J. B. [The diseased berries have been imperfectly fertilised. If you cut them open you will find that they contain only two stones, whilst good berries properly fertilised have four. Lady Downes and Muscats are more liable to such mishaps than other kinds.—S.]

Paris Daisy.—*Cheltenham.*—Its botanical name is Chrysanthemum frutescens; it is a vigorous, half-hardy plant, extensively grown about Paris in the summer time. It is readily propagated by means of cuttings, which may be wintered like those of ordinary or half-hardy plants.—M.

Names of Plants.—*Pool Court.*—Catalpa bignonioides (United States) and Pyrethrum Balsamita (Levant). *Manchester.*—1, Potentilla ambigua (Himalaya); 2, P. alpestris var. (Britain). The large white Everlasting so common in the chaplets sold in the shops is a species of Helichrysum. *C. Ritchie.*—Mirabilis Jalapa. *Killenaule.*—Apparently Carex muricata variegata, but a better specimen should have been sent. *G. M.*—1. The Magnolia Holly (Ilex latifolia). 2. Pittosporum species; impossible to say which without much fuller material.

Carnation Souvenir de la Malmaison.—A year or so since I bought a plant of this Carnation which was then in flower. After flowering, I took off six cuttings and struck them in small pots in a Cucumber frame. As soon as the pots were full of roots they were shifted into 4½-in. ones, and about October they were placed in the greenhouse. They are now plants from 18 in. to 24 in. high, strong and healthy, but they show no sign of flowering. What is the proper course to adopt? had they better be cut down, or allowed to remain as they are? If allowed to remain, will they flower during the winter or next spring?—H. M. [Do not cut them down; that would only retard their blooming. They will flower in winter or early in spring provided a little heat be given them. If kept in an ordinary greenhouse they will bloom in April or May. You had better shift the plants into 6-in. or 7-in. pots.—J. D.]

Scale in Greenhouses.—The plants in my greenhouse are infested with scale. Is there any means of getting rid of it by fumigation or syringing, the foliage being too dense for cleaning each leaf?—F. T. B. [It is not stated whether it is brown or white scale that infests the plants. The former may be readily destroyed by perseverance in washing with Stevenson's Abyssinian Mixture, the most effectual insecticide with which I have ever met and the most harmless to the plants. Dip or syringe them, so as to wet every part, in a solution consisting of 5 oz. or 6 oz. to the gallon dissolved in boiling water, repeating the dressing three or four times in the course of two months. No better time than September and October can be selected for the purpose, when the growth is almost matured. White scale is difficult to kill, and it will take a stronger dressing to destroy it than the leaves of most plants will bear. Anything that can be cut back close in the winter, so as to divest the plants of leaves, and allow the wood to be washed with the mixture at 8 oz. to the gallon, can in this way be cleansed. It must not be used at more than 5 oz. to the gallon in the autumn for Camellias when the buds are set, or they may fall off.—T. Baines.]

Flowering Stephanotis in Pots.—How can I flower this in pots? I have very fine plants, but they do not flower although they are luxuriant in growth. Also, are there two kinds of Stephanotis?—G. [Had the exact conditions been stated under which the plants of Stephanotis were grown as to heat, light, moisture, and how trained, all of which have a good deal to do with the flowering of this plant, it would have been much easier to prescribe a remedy for its not blooming. It succeeds best grown in a moderate stove temperature, say 70° to 80° in the daytime, and from 60° to 65° by night during the growing season, with from 50° to 55° night and 5° or 10° warmer in the day in winter. If required to be grown permanently on the roof of the house it should be trained to wires near the glass on the sunny side of the house; if to be trained on a trellis when in flower, strings may be used in place of wires, keeping it on these, except during the time of blooming. Shade no more than is necessary to prevent scorching, and none at all if this does not occur. Water moderately during the growing season and syringe overhead. Keep the plant much drier in winter, and do not prune, except immediately after flowering. Do not ever over-pot the plant; keep clear from insects, and I have no doubt it will flower. I have not found any difference as regards varieties, although some growers maintain there is.—T. Baines.]

Weeds on Lawns.—How can I get rid of Plantains from a lawn? I have tried extracting them with a Plantain-fork, but that, I found, left most of the roots behind. I then tried loosening the turf with a Potato-fork and then using the Plantain-fork. In this way I got out most of the roots; but still fragments remained, and wherever one was taken up, half-a-dozen appeared in a few weeks. I should also be glad to know, in connection with this subject, whether any one has observed the effect of using a mowing machine without the Grass box. I have a strong suspicion that it encourages the spread of Plantains. The seed of that pest comes to maturity very rapidly, and I cannot help fancying that scattering the heads on the turf causes it to seed itself. At any rate, the Plantains on my lawn appear to have increased very much since I adopted this plan of mowing, and, the effect of my attempts to uproot them being as stated above, the lawn will soon be nothing but Plantains, unless some kind friend can tell me how to get rid of them.—A. M. A. [A drop of sulphuric acid applied with a pointed stick to the crown of each will most effectually rid you of Plantains by killing every particle of root. We have no experience of the latter part of your query, but think it most improbable, *i.e.*, if the lawn were mown weekly, as every lawn should be in early spring and summer.—W. W. H.]

Winter Flowers for Cutting.—"G. S. M." (see p. 143) will find the following plants suitable for his purpose, and they are neither difficult to grow nor expensive: Calla (Richardia) æthiopica, double white and red Primulas, Eupatorium odoratissimum, Abutilon Boule de Neige. The temperature named would be too hot for Camellias, or they are excellent winter-flowering plants, but it would suit many of the Begonias, such as insignis and manicata. Chrysanthemums, of course, should be grown in quantity, and these, as well as most of the other plants named, would do better in the open air in summer, which would keep the growth compact, and secure its proper maturation. Tree Carnations, Daphne rubra and alba, would be useful. Epiphyllums, again, would flower beautifully in winter, and when the plants have attained to some size, cutting them moderately would benefit them, and keep them properly in bounds. Bouvardias, Cinerarias, several of the winter-flowering Salvias, such as splendens and gesneræflora, Eucharis amazonica, might be so managed as to flower in such a house in winter by placing the pots on or near the flue to start up the spikes. On the shelves near the glass a grand show might be made of zonal Pelargoniums alone, and a bit or two of scarlet Geraniums in a vase of flowers in winter, seems to impart a warmth of colouring quite unequalled by any other flower. Of course to bloom them successfully they must have special preparation. Strong cuttings of the right kinds should be put into single pots in spring. After the majority of the bedding plants are out of the way will do. They must be shifted on as they require it, and have all flower-buds pinched off. As soon as they show themselves, and after the middle of May, they should be placed on a coal-ash bed in the open air. In this way dwarf, sturdy plants will be produced that will not disappoint. The long, slender spray of Thyrsacanthus rutilans, falling over the sides of a vase, has a charming effect, and it is an easy plant to grow, and never fails to flower well. If a plant or two of Tropæolum Lobbianum could be trained up the rafters they would supply many bright and useful flowers during the dull season, as well as drooping sprays to hang over the edges of vases, and the flowers last a long time in winter. An almost endless variety of names might be added to this list, but I will now only mention two or three hardy shrubs, viz., Deutzia gracilis, Andromeda floribunda, Prunus triloba, and Spiræa prunifolia fl.-pl. Of course Spiræa japonica is quite indispensable. Strong crowns potted in autumn would be in flower in such a house as that named by Christmas. Your correspondent writes from a district where the Laurustinus does not flower well in winter in the open air. He certainly ought to have a few plants of it in pots to be introduced to the greenhouse just before the cold weather sets in. The flowers are exceedingly beautiful, and scarcely anything will give so little trouble for the return which it gives in pure white flowers. Something, too, ought to be done with bulbs. Roman Hyacinths might be had in bloom early in autumn, to be followed by other bulbs and Lily of the Valley. In the open air, where a little shelter could be given if required, it would be desirable to have a good bed of Christmas Roses; indeed, these alone, and a good batch of Callas, would, for a long time in the depth of winter, yield a supply of flowers that would be most effective in large vases when set off with the necessary foliage.—E. Hobday.

—— The following plants will suit "G. S. M.'s" purpose, viz., the different varieties of Cyclamen persicum, Eupatorium riparium, Bouvardia jasminoides, Vreelandi, and longiflora; Tree Carnations, particularly of whites—La Belle, the Bride, Lady Blanche, and Queen of the Whites; of scarlets—Dragon, Covent Garden Scarlet, Boule de Feu, and Vulcan; white Geraniums of the Madame Vaucher type and scarlets of the Vesuvius type. The following Ivy-leaved kinds are also exceedingly useful, viz., Gem, Nemesis, Bridal Wreath, Progress, and Miss Blanche. Tropæolum Cooperi, planted now and trained up the rafters, will produce abundance of bloom all winter. Shelves near the glass should be occupied with Primula sinensis fimbriata, rubra and alba, and the double-flowered types. If desirable, a few Camellias, early-flowering Azaleas, and Chrysanthemums might be added; also Narcissus Queen of the Netherlands and Primula nivalis. The latter is hardy and flowers early in spring, but when grown in pots and put in a greenhouse it flowers much earlier and produces exquisite heads of bloom.—J. Ollerhead.

Alphabetical Hand-book for England and Wales.*—This is the handiest, readiest, and, in many respects, the best book of reference for tourists and business people visiting any part of England and Wales we have yet seen. The information is not only well selected and condensed, without bearing signs of mutilation or suppression, but in its plan this hand-book seems better conceived than other books of a similar kind. One instance will show its merits in this respect. A visitor to Bedford would find in most hand-books information upon Bedford alone; here, however, he finds added to that the description of Elstow, Clapham, Bromham, Sharnbrook, and other places of interest within easy reach of Bedford, but of which, if the book had been arranged in the ordinary way of alphabetical hand-books, the visitor would have had no trace. The information as to excursions worth making from all the centres of interest is well conveyed, and the editor tells us that they are principally the results of his own personal experience. In a work of this kind it is of course impossible to be perfect in a first edition, but apparently the faults are few. More care in a few small details might, however, have been shown. For instance, we are told that Dunstable has a station "on the Great Northern Railway, 36¾ miles from King's Cross, *viâ* Hatfield and Luton," and another "on the London and North-Western Railway, 47½ miles from London." Of course the latter should read, 47½ miles from Euston, *viâ* Leighton. The book is excellently printed, and a good map is appended.—T. G. A.

The first volume of the continuation of De Candolle's "Prodromus" has just been issued. It comprises monographs of three Orders. The official title of the work is "Monographiæ Phanerogamarum, Prodromi nunc continuatio, nunc revisio," a title that sufficiently indicates the nature and objects of the volume.

Dr. Balfour has a very elaborate paper on the genus Pandanus in the last number of the "Journal of the Linnean Society" (July 31).

Grapes in Covent Garden.—However highly the Black Hamburgh may be esteemed in private gardens, it is not a favourite in Covent Garden Market when placed in competition with such kinds as Gros Colman or Madresfield Court. The former kind, owing to its large berries and fine appearance, realises more money at this season of the year. Though generally considered a late Grape, market gardeners manage to have it ready for market before the middle of August, *i.e.*, during what is termed the London season, for after that time the demand greatly decreases and prices diminish. One of the most extensive growers of Grapes near London, who has some fifteen or twenty large Vineries, has at the present time scarcely a bunch of Grapes left, it having been found that late Grapes do not pay nearly so well, all things considered, as those that are sent to market from June to August.

Glasgow Botanic Gardens.—We are informed that the Fourcroya gigantea, a plant closely allied to the genus Agave (Aloe americana) is at present sending up a bloom-scape in the Kibble Conservatory, Royal Botanic Gardens, Glasgow. The plant in question is believed to have been in the garden collection since its formation in 1817, and, judging from the height of its aborescent stem, is likely even at that time to have been of considerable age. Indeed, the popular fable of the plant, which blooms once in 100 years, is likely to be fully realised in this instance. The growth of the spike is extremely rapid, and attains a height of 20 ft. to 30 ft. in its native country (South America), producing numerous alternate branches, from which hang the white depending flowers on short stalks.—"Glasgow News."

Porous *v.* Non-porous Vases.—I saw at Woodlawn, Castlewellan, Co. Down, two fine plants of Veronica Andersoni variegata growing in iron vases, in which they have been more than two years. They were growing and flowering in the most vigorous and profuse manner, and seemed quite at home.—T. Smith.

The Swamp Lily (Lilium superbum).—This stately American plant is now in fine flower about London. It enjoys a moist, deep, peaty or sandy soil. A few years ago this species was rarely to be seen in cultivation.—V.

OBITUARY.

Robert Sim died at Sidcup Hill, Kent, on the 3rd inst., in his eighty-seventh year. He was an ardent lover of Ferns and their varieties, both British and foreign, and cultivated a large collection of them in his nursery at Footscray.

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* "Alphabetical Handbook for England and Wales." London: John Murray, Albemarle Street.

No. 353.] SATURDAY, AUGUST 24, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

AUTUMN TREATMENT OF APRICOTS AND PEACHES.

Now that autumn is approaching, a few notes by way of reminders as to what ought to be done in order to obtain a good supply of fruit next season may not be unacceptable. The best men amongst us are far too apt to neglect fruit trees when once the crop has been gathered. As regards Apricots, our trees have borne a very fine crop of fruit, which is now over with the exception of Pêche Tardif, a good late variety. The trees are on south and west walls, and do equally well on both aspects, having never failed to produce a crop for these past eight years, and this we attribute in no small measure to the autumn treatment the trees have had, which is, that they are never allowed to want water. If the rainfall be insufficient, we set to work and water artifically. Insects of any kind are not allowed a lodgment on them. Red spider as soon as perceived is removed by means of a shower bath, vigorously administered. Soft brown scale has once or twice bothered us, but this we settled effectually last winter, by painting the whole of the trees with a solution of soft soap and Tobacco water, made adhesive with cow manure. Mildew has never troubled us, doubtless because the trees have had abundance of water, and every branch and leaf have been afforded breathing space. Some of the trees are now manifesting a tendency to make fresh growth, which growth we shall endeavour to repress by occasionally pinching out the points of the new shoots, for at this late season all the functions of the tree should be concentrated on the thorough maturation of the wood and plumping up of the fruit buds. As soon as the foliage turns yellow and begins to fall, any trees that have to be moved or replanted will be done at once, for if done thus early the trees will next season fruit as well as if they had not been moved. Our soil is a light loam, which requires to be made very firm and to be liberally manured, which is always done as soon as the leaves are off by removing any loose, [inert soil, and replacing it with maiden loam, some ½-in. bones, and afterwards mulching with stable manure. Of course, in heavy soils, drains are of the first importance, and, to ensure their efficiency, they should be examined annually. Peaches have a great deal in common with Apricots—with this exception, that they more readily fall a prey to parasites and insects, and greater vigilance is, therefore, required to keep such pests at bay. At the beginning of the present season our trees, through press of work, were allowed to get badly infested with green and black fly, but a couple of good dressings of soap-suds, to which was added a quantity of Tobacco water, cleansed them thoroughly and apparently promoted more vigorous growth than usual. Unfortunately, they are now affected with red spider, which, as soon as the fruit is off, will be dislodged in the same manner as that named for Apricots. I acknowledge being beaten by this insect when once it gets a firm footing on Peaches, having tried all means likely and unlikely to effect a riddance, and nothing I have ever tried has proved so effectual as liberal waterings of root and branch. All the new shoots for next season's fruiting are now laid in close to the wall, and some of them are now making soft, watery side-laterals; these we shall now keep pinched with the same object as that given for Apricots. We gathered ripe fruit of Rivers' Large Early Mignonne on the 8th of the present month, first-class both as regards size and quality. Violette Hâtive and Royal George will not be ripe till the end of the month, thus showing what a valuable kind this is; of course, Early Louise and Early Beatrice are much earlier, but, compared with Large Early Mignonne, they sink into insignificance, being too small and often of indifferent quality. When once the fruit is off, Peaches soon begin to shed their foliage; then is the time to commence lifting such as require that operation. Moved with care, we have seen as fine fruit the ollowing season from trees planted out at the end of September as from those thoroughly established. Notes of all trees to be planted, replaced, or renovated, should now be made, and soil prepared; also plans of drains and drainage materials should be got in readiness, in order that there may be no unnecessary delay when the time arrives; and, finally, if no other holiday comes in the way, take a trip to one of the nurseries and select the trees required.

W. W. H.

Osborn's Prolific Fig.—Small plants of this new Fig are now bearing ripe fruit in Messrs. Osborn's nursery, Fulham. It is a remarkably free-fruiting kind, even small plants bearing several good-sized fruits. In appearance the fruit resembles that of the White Marseilles, but the plant is more productive. Additions to our gardens in the way of new Figs are most welcome, as the Fig, though the most luscious of all fruits, is, to some extent, neglected.—S.

Summer-pruning Currants.—This, although a good practice if done judiciously, is liable to do more harm than good if carried to excess. I recently observed some bushes pruned in as closely as they ordinarily are at Christmas. The effect of thus cutting off nearly all the new growth is anything but beneficial to the well-being of the bush. I would strongly recommend the stopping the shoots early on trees trained to walls, as, if left too long, the lower leaves drop off, and without good foliage the fruit never keeps well. But on open bushes merely stopping the strongest leading shoots is all that is necessary, and this only when the growth is luxuriant.—J. G.

Reported Appearance of the Phylloxera in the Vineyards of Greece.—The Phylloxera vastatrix, which has done so much damage to the Vines of France, Italy, and other wine-growing countries, does not appear as yet to have been introduced amongst the Vines of Greece and the adjacent islands. A short time ago it was rumoured that this formidable pest had made its appearance in several Vineyards in the neighbourhood of Corinth, Missolonghi, and Patras. I may remind your readers that it is from these districts that the chief supply of Currants for their Christmas puddings and mince pies are obtained. The Hellenic Government, with praiseworthy promptitude, immediately despatched a commission of experts to investigate the matter on the spot. The outcome of their labours has been that they have certified that although a few of the Vines amongst the hundreds of thousands growing in these localities have withered away, the evil has not been caused by the Phylloxera.—X. Landerer, *Athens.*

Gathering Peaches.—The Peach, more than any other fruit, requires careful handling when plucking it from the tree, as the least bruise leaves a dark speck on its tender skin, that rapidly spreads. Like any other operation that requires delicacy of touch, some experience is necessary before one can gather Peaches rapidly without damaging them. Grasp the fruit gently but firmly, so that the slight force used is pretty equally distributed, and brought to bear at the back of the fruit, pressing it outward from the stalk. If the fruit be ripe enough for gathering, a very slight pressure will detach it from the stalk; and if the eye and hand act together, there will be no difficulty in hitting upon those fruits only which are fit to gather, and which if left much longer would fall and be bruised. Even where precautions have been taken by covering the border deeply with soft litter, or by suspending nets to catch the falling fruits, it is better to look over the trees daily, and gather all that part readily from the stalk, as those fruits that fall from the trees through being dead ripe will not keep so well as those that have undergone the finishing process gradually in a cool airy room. The flavour of Peaches under glass is often deteriorated by having too much water given in the later stages of their ripening, or by deficient ventilation. Peaches ripening now in unheated houses can scarcely have too much fresh air, either by night or by day, unless during severe storms of rain or wind.—E. Hobday.

Early Peaches.—We send by mail a couple of specimens of the Alexander Peach, rather over-ripe. The Amsdens were all disposed of earlier. These two Peaches are so much alike in size, colour, season and quality, that we cannot separate them. Beatrice is ten days or two weeks behind; we send one to show you, as all stood together and had equal chance. These are from indoors, but after the fruit was set, the glass was off, so that they do not ripen much sooner than in a good place outside.—Ellwanger & Barry, *Rochester, N.Y.* [These specimens of the Alexander Peach came in good condition—beautiful in appearance and excellent in quality. They measured over 2 in. in diameter, and, growing in a house, were obviously several days earlier than they could be in open ground, as the specimens on our trees in a warm exposure are still green and not quite so large as the above-mentioned. The Beatrice was hard and green, with a full red cheek in process of development, and about one-third or one-fourth the bulk of the Alexander.—"Country Gentleman."]

EXHIBITION CARNATIONS AND PICOTEES.

In saying a few words in reply to Mr. Douglas on this subject, I shall try not to miss any point in his argument, as I find it is rather common in discussions of this kind to glide by the strong and central points of your adversary, and to dally with him on minor ones, or to beg the question by asserting that he cannot know anything about it. It is by no means "evident that the writers do not grow Carnations themselves," as he asserts; but this surely has nothing to do with the question! As to their knowledge of the way they are prepared for exhibition, it is scarcely necessary to say that those who doubt the wisdom of the artificial way of preparing them for show have no desire to master the details of an art the result of which they deplore. Whatever the cause of the cardboard being placed around the flower, the effect is, from any but a technical point of view, deplorable. As to the varied beauty of the flower being destroyed, that, after all, is a case of the florist's taste against that of the artist or the lover of Nature. I admire florists' Carnations and Picotees, but I admire them more still when the centre is irregular and when "some of the petals are not slightly moved aside, in order to show the varied beauty of those that are hid underneath." For me, and I fancy for numbers of others, the beauty suggested by a flower or other object is as delightful as that which is shown. This, indeed, is a mere truism of art, and ought to be known and recognised by all those who have Rosebuds opening about them. I am barbarous enough to like "the flowers with the petals heaped together, as it were, in segments." As to the cards, it is interesting to know that some people like them, and perhaps they may have some value in setting off the formal flower on the flat, but to most people they are wholly ridiculous when seen around flowers on growing plants. It will probably do good to find so skilful an exhibitor as Mr. Douglas objecting to those long and ugly lines of Boxes which do so much to steal the beauty of many of our finest flowers. Groups and edgings of green plants, as he suggests, would be for the better, but much will also depend on the way in which the individual flowers are arranged. Let us follow Mr. Douglas for an instant in his reference to a picture-gallery. That of all places would be the least likely to justify what is done by the florist. The artist is, in fact, the opposite pole, so to speak. He delights in irregularity, in change, in play of light and shade, in the infinite variety of surface and of form found in most natural objects. The true artist, instead of flattening out, or making an object formal, cannot even be got to draw or to look at anything which has these characteristics. The argument with which Mr. Douglas finishes, that the more one knows of any subject the more one enjoys it, is no doubt true of many things, some of them far from being artistic. Nobody can for a moment doubt that those old gentlemen who played dominoes at the same table every night for twenty years or so must know a good deal about the subject and find much delight in it, but surely we are allowed to have our own opinion of this "pastime" without making a profound study of the game! If this be not granted to us, then the prisoner may dispute the right of the judge to deal with him on account of his lordship's want of knowledge of his speciality in crime. In the case of these flowers, they are exhibited, it is fair to suppose, for the admiration and instruction of the public, and, therefore, even those of the public who do not grow Carnations have a perfect right to express the impressions made upon them by the exhibition. For my own part, I am, unlike many of the public, somewhat acquainted with Pinks and Carnations both in their native homes and in gardens, and I can only repeat that the present mode of showing them prevents the public from seeing much of the beauty that they naturally possess. I take up the thing wholly in the interest of the flowers and of those who grow them, and mainly to say that if we want Pinks and Carnations to take anything like their due place in the gardens of those who now neglect them, we should show them in some other and more natural and artistic ways than those in which they have been shown in London recently. Those who know them best could suggest what is best to be done, and, we suppose, would not object to well-grown plants of certain varieties or races being shown in pots, the stakes to be as inconspicuous as possible, and of course with flowers and buds in all stages and without "collars." On the other hand, certain races could be shown cut in vases of such simple and artistic design as has not been uncommon of late in certain houses in London. In this last case, at least, we should have something that everybody would be charmed with and that an artist would draw. That any artist respecting himself (an artist, be it understood, and not a mere drawer of diagrams, and of the coloured falsehoods which frequently appear as illustrations of florists' flowers—as, for example, Rose Beauty of Glazenwood) would draw an arrangement is, it may be considered, a proof of its merit, and I think it would be not only possible but easy to so arrange these Carnations and Picotees at flower shows that an artist would be charmed to draw a vase of flowers to make a little picture of it; and this might be done without prejudice to the florist's way, as he might have his table apart and all that he considers necessary. His danger is that he prevents the public seeing all the charms that are in these flowers, owing to showing them, even at national and international shows, only in one formal way, which is all very well if he only desires his favourites to be grown or seen by those who take his point of view; but we should like to see those delightful northern flowers, more precious for our English gardens than any tropical plants, grown ten times as much as they are at present, and we should like to see a show of them attended by the general public as well as by specialists. But even from the purely technical point of view we may ask again, Why, after so much effort and so much talk as to what has been done, are you not able to produce flowers that answer your ideal without the aid of a variety of instruments? Mr. Douglas says that some varieties come up to the ideal without the aid of the instruments or the knowledge to use them. Is it fair, then, to put what we may call manipulated flowers in competition with those that come up to the ideal without artificial assistance? For the rest we shall, though we desire to see the plants shown in a variety of ways, and, above all, in ways not offensive to the artist or general lover of flowers, be pleased to print anything florists may have to say on the matter, always excepting those general charges of ignorance, which have long disappeared from much of our best writings, and only remain to disfigure horticultural journals. If any correspondent of ours does show that he is not acquainted with the subject, then the florist has him at a great disadvantage, and can show by facts and reasoning his own superior knowledge without condescending to assert that any one is unfitted to express an opinion as to a plant, which, before "bedding out," had quite done its work, was grown in every bit of ground to which the name of garden was given. W. R.

—— Notwithstanding what Mr. Douglas has said (p. 145) in favour of "dressing" Carnations and Picotees, I still maintain that the practice is a vicious one. They should be shown as they are grown, as Roses are, and not as manipulated by an expert. The pulling out of petals and arranging the remainder, not as Nature placed them, but as the operator thinks Nature ought to have placed them, is an outrageous violation of good taste. Of cards or paper backs I will, at present, say nothing, but if they were abolished, would the flowers suffer? Mr. Douglas's metaphor of the picture gallery is so forcible, that I almost hesitate to blunt its point. It means that I am the "ignorant critic," and he the painter whose works bear the "stamp of genius."—A. D.

The Golden Japanese Box.—This at present is the brightest golden plant in the grounds here. Quantities of it, from 8 in. to 1 ft. in height, grouped together, look like a mass of burnished gold. Unfortunately, this colour is only developed in such young plants, or in old ones that are regularly clipped or pruned; the latter, when allowed to grow at will, are but sparingly variegated. It is of moderate growth, which adds to its value as an edging plant, if, indeed, this colour can be considered suitable in edging plants. It might not be in good taste against a reddish-brown gravel walk, but this plant makes an excellent edging to ashed or asphalted walks. Besides, I have often thought that this Box, retaining, as it does, a large proportion of its brightness and beauty throughout the winter, when there is such a paucity of colour, might be effectively used as a permanent bedding plant.—George Syme, *Elvaston Nurseries, Borrowash.*

NOTES OF THE WEEK.

Horticulture at the French Exhibition.—We have never witnessed anything in the way of horticulture more remarkable than the display of their products made at this Exhibition by the horticulturists of France. It is impossible to give an idea in writing of the confusion that reigned around these buildings in winter and spring, and yet at present there is the most perfect order and keeping, and whole gardens of evergreen and other shrubs, fruit trees, flower gardens, collections of forest and ornamental trees, and numerous fresh lawns, dotted with subjects of the greatest interest to all who care for gardens or trees. All this is the more remarkable when we consider the state in which many of the best nursery gardens about Paris were a few years ago. There is one fine shrubbery of evergreens and Conifers, in the grounds of the Trocadero, that comes from a nursery south of Paris. We visited that nursery about the 20th day of March, 1871, and there was not one tree or shrub in its whole extent that was not cut down to the ground by the soldiers who had occupied the place. The rooms in the house were heaped with rubbish, and neither the owner nor any of his men had returned at the time, but now he sends specimens to the Exhibition, such as the Waterers might send to one in England! It is wholly impossible to give any idea of the wealth of horticultural material at the Exhibition. The enormous and confusing mass of buildings is everywhere surrounded and separated by plantations more or less interesting, and even the Fig and Asparagus plantations of Argenteuil are represented by small plantations, and many of the trained trees bear fruit, though only transplanted here in March and April. It is to be regretted that, owing to some mistake or omission in entering, or probably owing to absence of home organisation, which might have helped us to act together, and in good time, English horticulture is but little represented at the Exhibition. This is certainly an oversight, as it is seldom such an opportunity occurs of bringing our productions before the eyes of Europe and the world, for no other city attracts so many enlightened visitors from all parts of Europe, and, indeed, from all parts of the world, as Paris on an occasion like this.

American Aloe in Flower.—I have in my garden an Aloe (so-called)—that is, an Agave americana—that is now in full bud; a beautiful plant, 20 ft. 4 in. high, with thirty-six blooming branches, and, I suppose, nearly or quite 3000 buds upon them, and apparently just about to burst into full bloom, but for the last ten days it has made but little progress, and there are some fears as to whether the buds will really fully expand. I have known the plant forty-six years, and my impression is that forty-six years ago it was forty to fifty years old. It has been taken much care of, and has always been vigorous and healthy. The full height above the leaves of last year was made in little more than two months.—Burwood Godlee, *Leighside, Lewes.*

Heckfield Place Gardens.—It may interest some to know that these gardens are to be thrown open to the public from September 2 to 7. They have a high reputation for the excellence of their carpet bedding; also for the good examples of Grapes and other fruits, as well as vegetables, which they contain, and, not least, for their many lovely natural beauties. The nearest railway stations are Winchfield, Reading, and Wokingham, from either of which the drive to Heckfield is over a delightful stretch of country. Tickets of admission may be had on application to Mr. Wildsmith, The Gardens, Heckfield Place, Winchfield.

Single Dahlias.—Dahlia glabra is blooming freely in the Botanical Gardens, Birmingham, and for those desirous of obtaining plants from which they can cut freely, I think it worth while mentioning. The flowers are lilac and the plant is dwarf in habit. I would also mention as a companion D. coccinea, a rather taller species with bright scarlet flowers, which are also produced in profusion.—J. Trevor.

The Flowering Rush.—This very beautiful water plant is now to be seen in full beauty, growing naturally, in or on the banks of streams and small rivers where the current is not too rapid and the bottom of a somewhat holding nature. It should form a feature in all pieces of natural or artificial water, into which it is easily introduced. It flourishes best rather away from the margin and in the full sun, in which situation its distinct character is best displayed.—J. Cornhill.

Segrez.—The members of the Botanical and Horticultural Congress, recently assembled in Paris, were entertained last Sunday by M. Lavallée, at his country seat at Segrez, where he has collected and planted what is probably the fullest collection of trees and shrubs that has ever been got together in one collection, there being between 4000 and 5000 species of trees and shrubs planted in the open air. With a great number of visitors from all parts of Europe and America in the grounds, many of them old friends, and all of them delighted and enthusiastic spectators, it was not possible to give that attention to the trees which so extensive a collection demanded, but we hope to have at another time an opportunity of examining in some detail and saying something in The Garden concerning this unique collection. It only remains for us to say now that M. Lavallée's many visitors were charmed with Segrez, and carried away agreeable souvenirs of the courtesy of its owner, of his hospitality, and of a day most profitably and pleasantly spent.

Illuminations and Trees.—Among the various attractions provided for his guests by M. Lavallée was that of illuminating his grounds with various coloured lights. The effect of these on the numerous lawns round the house, as they showed the different forms of the trees in different colours, was very charming.

Alisma sinensis.—This is a fine tall water plant with large white, but not numerous, flowers. It grows about 4 ft. high, and is a graceful object for the water side. It is now in bloom in M. Lavallée's collection at Segrez.

Bignonia erecta.—This is a very handsome kind, near the well-known Bignonia grandiflora, so handsome an ornament on walls in some districts, and very often grown in France. The present kind forms a handsome and graceful bush, with fine leaves and every shoot tipped with fine flowers.

Polygonum Sachalinense.—This enormous species is now in flower in M. Lavallée's collection, and is not devoid of beauty, the blooms somewhat resembling those of the better known P. cuspidatum, produced, however, in a more open manner. The effect indeed of this enormous Knotweed, with its large flowers, great arching shoots, and fine leaves, is very singular and fine.

Clethra paniculata.—This is a very interesting, white-flowered, sweet-scented bush, about 3 ft. high, now flowering freely in M. Lavallée's collection at Segrez, where it grows freely in peat soil.

New Begonia.—One would almost imagine, from the great variety of Begonias shown at South Kensingson the other day, that any hope of gaining anything distinct was almost impossible. In looking over a stock of seedlings the other day in Messrs. Veitch's nursery, however, we noticed one with very large rose-magenta flowers with deeply serrated petals. From a florist's point of view they may not be considered any improvement on existing kinds, but they nevertheless are quite as effective as those with round formal petals.

Lilium auratum var. Emperor.—In a bed of imported Lilies of the auratum type we have found a very singular variety, which we have named Emperor, and which we also flowered in 1855. It is remarkable for the deep purplish-crimson tint of a broad streak which runs from the tips of the petals to their base, forcibly contrasting with the vivid deep yellow, narrow, central band, which in continued more than half-way up the petals. There are in this variety few or no spots. It resembles rubro-vittatum, but differs from it in the absence of spots, the intensely deep purple tint, and is the presence of the yellow streak, which is absent, or almost entirely so, in rubro-vittatum. The petals are somewhat narrower than those of the ordinary L. auratum.—A. Wallace.

Nerine corusca major.—Good examples of this attractive Amaryllid may now be found in several of the London nurseries. Its flower-trusses are large, and also the individual blossoms, which are cinnabar-scarlet. The greatest drawback belonging to it is that it flowers while the plants are leafless, but the objection is easily overcome by introducing the pots containing them among Ferns or similar handsome-leaved plants. Its culture is by no means difficult; all that is required is merely giving the bulbs a shift as soon as they have flowered, keeping them in a pit or greenhouse, and supplying them well with water whilst the leaves are growing. When they begin to die down water should be gradually withheld until every leaf has died off, when they may be placed under a greenhouse stage or in a room until the following summer. As soon as the flower-spikes show themselves liquid manure will greatly assist their development and add to the size and colour of the flowers.

Arbutus Menziesi and procera.—Mr. George Syme speaks (p. 154) of Arbutus Menziesi and A. procera as if they were one and the same species, an opinion in which I venture to think he is mistaken, as the handsome Arbutus sent me about two years ago by Messrs. Osborn, of the Fulham Nurseries, is quite distinct and different from what I have long grown as and believe to be the true Arbutus procera. The leaf of the first named is distinctly fimbriated and longer and more pointed than that of the latter, the edge of which is quite smooth.—W. E. Gumbleton, *Belgrove, Queenstown.*

Cool Orchids from Columbia.—A portion of Mr. Horsman's Orchids, to which we lately alluded (p. 115), was sold the other day at Stevens', and realised good prices—452 lots fetched £355. We earn that the last portion of his plants will be offered next Thursday.

NOTES FROM KEW.

Hardy Shrubs.—One of the most charming of flowering shrubs, and the most handsome one at present in flower, is Escallonia floribunda; it has neat, glossy, dark green leaves, very finely toothed, and huge panicles of large, pure white blossoms; add to this that it is an extremely free-flowering kind, and enough has been said to prove its value as a hardy decorative plant. Dioscorea japonica makes an elegant covering for arbours, &c., in sunny spots; it has dark green, heart-shaped leaves, somewhat resembling those of the Black Bryony of our English hedgerows, and short spikes of small, greenish-white flowers, which are gracefully arranged on long, leafy branchlets. Although possessing no colour or scent to recommend it, this will be admired by all to whom grace of habit and beauty of form are as important as colour. Ceanothus latifolius has large leaves and bears good-sized panicles of blue flowers. C. Leon Simon has flat-topped panicles of blossoms rather paler in colour.

Hardy Herbaceous Plants.—Some of the American Eryngiums are so widely different from the Sea Holly of our British coast, and also from all the Old World kinds, that no one unacquainted with them and seeing them out of flower would ever suspect them to have anything in common. Few hardy plants give such a sub-tropical aspect to the garden, and none with which we are acquainted resemble them; they furnish us with a style of beauty all their own, and, on this account, are especially valuable. Those mentioned below are distinct and striking kinds, and all like a tolerably moist position. Eryngium pandanifolium, from Monte Video, attains a considerable size, and has long, glaucous leaves, much resembling those of the Screw Pine family; E. Serra, a Brazilian kind, has short, broad, strongly-spined leaves, and is a dwarfer species than the preceding; E. præaltum, from Central America, has strap-shaped leaves; E. bromeliæfolium, a Mexican sort, has dark green, very spiny-edged foliage; E. aquaticum, a North American kind, has glaucous, strap-shaped leaves; E. eburneum, E. Lasseauxi, and E. paniculatum are all from Monte Video. The first is a noble species, attaining a height of 10 ft. to 12 ft., and having bright, glossy green leaves with spiny edges; the second has long, narrow, glaucous leaves, edged with short teeth; E. paniculatum is a very neat plant with rosettes of curved leaves, much resembling those of many Bromeliads. A handsome Scabious is Scabiosa graminifolia, a prostrate-growing sort, with whitish, Grassy leaves and showy blue blossoms. Sedum Ewersi, a native of Siberia, is a very beautiful Stonecrop; it is a most free-flowering kind with red blossoms. Seseli gummiferum, a stout-growing Umbellifer about 3 ft. high, has fleshy leaves, similar in outline to those of the common Samphire, and large umbels of white flowers. S. glaucum is a smaller kind, like the last named in habit. Allium carinatum and A. flavum resemble each other in habit; both grow about 1 ft. to 1½ ft. high, and bear large heads of small, long-stalked, drooping flowers—purple in A. carinatum, yellow in A. flavum. Stevea serrata, 2 ft. high, has small leaves and innumerable small heads of purple flowers. S. paniculata, 3 ft. high, has white flower-heads which present, at first sight, a considerable resemblance in size and arrangement to the common Woodruff. Aster sericeus, with small silky leaves and purple flowers, is a very distinct sort growing about 1½ ft. high. Wahlenbergia grandiflora, a splendid Bell-flower, bears long-stalked blossoms at the extremity of the branchlets; the flowers are similar in size and colour to those of Platycodon grandiflorum, but the plant is prostrate, not erect as Platycodon. Symphyandra pendula, a Caucasian perennial, has large, white, bell-shaped blossoms; from its very floriferous properties and elegant habit this would make a first-rate plant for hanging baskets. The pretty little, white-flowered, New Zealand Lobelia littoralis, which we recently noted, has now a good crop of purplish, berry-like fruits, handsome enough to cause the plant to be grown. Phalocallis plumbea, a South American Irid growing to a height of 3 ft., has long, narrow, sword-shaped leaves and large blossoms of a leaden hue; deep orange and white help, however, to make a peculiar and attractive combination. Although the blossoms of this plant, like those of Tigridia and several others of its relations, last but a few hours in beauty, the great number produced for a long period in succession makes up for the fugitive character of the individual flowers. Dianthus dentosus, a plant rarely met with, is a dwarf kind with purplish flowers and one which has a longer flowering season than most of its relations, blooming under favourable conditions for the greater part of the year. An Irid from North China, Iris dichotoma, is a noble species of distinct habit; it grows about 4 ft. high and bears a much-branched panicle and numerous mauve-coloured blossoms, the three sepals being deeper in colour than the rest of the flower, and spotted and blotched with pure white. Chelone Lyoni, a United States plant, somewhat like the better known C. obliqua, has large pink flowers crowded at the tips of the branches; it grows about 1½ ft. high.

Greenhouse Plants.—The New Zealand Metrosideros buxifolia with its neat, small, dark green, Box-like leaves and white flowers makes a charming shrub either for cultivation in pots or for planting out in the cool conservatory. Indigofera decora is a very pretty shrub worthy of general cultivation; it has light green pinnate leaves and racemes of pink and white flowers.—†

TREES AND SHRUBS.

LIME AVENUE AT TORQUAY.

In a late impression of The Garden much praise is bestowed on a Lime avenue at Oromana, in the county of Waterford, but no mention whatever is made of its dimensions. There is a Lime avenue here in Torquay, which I myself have just been measuring. It is one of three (the other two are much smaller) which radiate in three directions from near the entrance of old Forse Abbey. It is 1380 ft. in length, 15 ft. in breadth, and the space between the trees is just 14 ft. The girth of each tree is, as nearly as possible, 7½ ft. at about 3 ft. from the ground. I did not count the trees, but a late "History of Torquay" tells me that there are 148 of them, and that their age is supposed to be 70 or 80 years. The avenue in question runs north and south, with a slight curve towards the east at the southern end, and the ground is slightly undulating, having a gentle rise in the centre. It is truly a gem of its kind, claiming one's highest admiration even in this beautiful spot—Torquay. Ashley La Touche, R.N.

Inglewood, Torquay.

ANNUAL TIMBER SALE ON THE LONGLEAT ESTATE.

This took place at Horningsham on August 1. The average prices realised are as under. In consequence of the dull state of trade generally, the price of timber at this sale is about 15 per cent. lower than that of last year's sale. The prices will, however, bear favourable comparison with other sales throughout the country:—

No.	Description.	Average contents in each.	Average price per ft.	No.	Description.	Average contents in each.	Average price per ft.
			s. d.				s. d.
146	Oak	13 ft.	1 8	3	Abele Poplar.	206 ft.	1 4½
87	,,	16	1 9	1	Walnut.	100	2 0
284	,,	11	1 7	3	Elm—English.	18	0 11
66	,,	21	1 11¼	28	Scotch Spruce, & Silver Fir	13	0 7
9	,,	11	1 8¼	518	Oak and other Saplings.		each 3 2
103	,,	13	1 6	2428	Larch Poles.		each 0 2¼
61	,,	10	1 3	363	,,		0 7½
6	Ash	8	1 11	22 & 40 hundred.	Oak top and other Fagots.		11 6 per 100
28	,,	16	2 2				
8	,,	13	1 9½				
[illegible]	,,	13	2 3				
31	Beech.	27	1 2½				
14	Birch.	15	0 7¾				
6	Sweet Chesnut Sycamore and Wych Elm, 2 of each sort.	28	1 0¾				

The timber is cut and lying in the wood where it was felled.

Longleat. George Berry.

Acacia dealbata.—I observed in your number for August 17 that this graceful Acacia grows well so far north as Wigtonshire. Does it flower there or elsewhere in Britain? I have a specimen of it (nearly killed in 1860-1, but since recovered, and now about 25 ft. high) which was well furnished with flower-buds last year, but only a few flowers opened, and those were on the sunny side, January 25. I succeeded the same season in raising a few plants from suckers which were thrown up from the roots.—J. J. R., *Penrose, Helston.*

Cedrus Deodara.—A plant of this Cedar, planted here in 1841, has produced a large quantity of male catkins annually for the past eight years, but I have watched in vain for the female. The catkins have appeared from August 2 to 25, and remain until December; they vary from 1 in. to 2½ in. in length. I fear our summers are never hot enough to produce the cones, though instances have occurred of cones ripening in Devonshire and elsewhere. What is the experience of other counties?—J. J. R., *Penrose, Cornwall.*

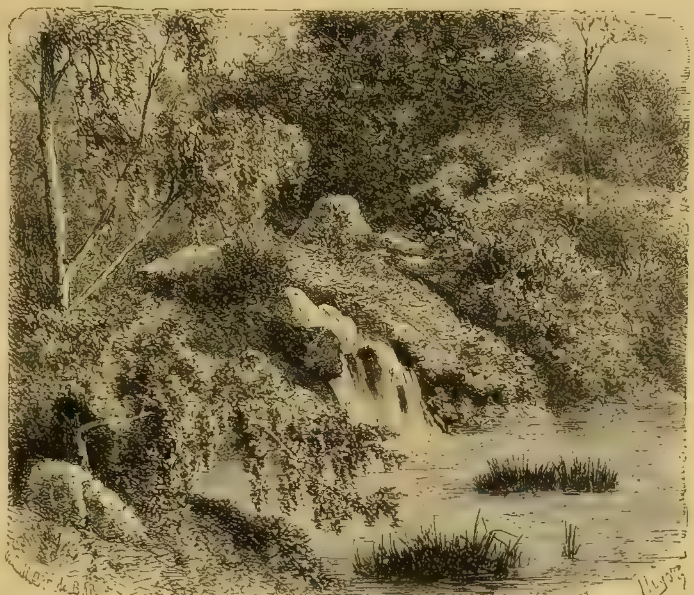
Bambusa Ragamowski.—This very ornamental dwarf Bamboo is valuable from its distinctness in size and form of leaf from the others, the leaves being large as compared with other hardy forms.—V.

ST. PETER'S-WORTS.

(SYMPHORICARPUS GLAUCA AND S. VULGARIS VARIEGATA.)

The Snowberry, which is the commonest and best known of this family, is often a nuisance in shrubberies, owing to its tendency to extend itself by means of underground roots and suckers to the injury of better shrubs. That is not so, however, with the kinds here named and to which I call attention now, mainly because I have found their long elegant sprays of neat foliage so useful for mixing with cut flowers in filling vases, &c. The foliage of glauca, as its name implies, consists of a mixed tint of green and greyish-blue, which towards autumn merges into bronze, and is very effective. The variegated kind is also exceedingly pretty for cutting to form a base for flowers in vases. The selection of foliage for mixing with cut flowers, is quite as important a matter as that of the flowers themselves, and opens up quite as wide a field for the exercise of taste and judgment. Ferns, of course, are always effective, but in arranging flowers in vases, I have felt the want of something light and elegant with slender, wiry stems capable of supporting the individual blossoms in their assigned positions without confusion or crowding; these shrubs I have found very useful for a change at this season. It is not the quantity nor yet the rarity of the flowers, but their arrangement and setting up that give the greatest satisfaction. A few common blossoms, tastefully arranged amid elegant foliage, so that the individual beauties of each are brought out, has a more pleasing effect than rare choice flowers if arranged in a meaningless way. Two artists may have just the same colours with which to work, and yet one may produce a delightful picture, whilst the work of the other may be a mere daub; and so it is in the arrangement of flowers in a bouquet or vase. The St. Peter's-worts form dense bushes from 4 ft. to 6 ft. high, and produce in August numerous small clusters of pale-coloured flowers at the axils of the leaves. These are followed in autumn by clusters of small bright-coloured fruit or berries, and these, from their arrangement along the slender branches, produce rather a singular and not uninteresting appearance.

E. Hobday.



Weeping Birch and Cascade.

Lilac Charles the Tenth.—This is an excellent variety for forcing, and where Lilac in or out of season is appreciated it ought to be largely grown. At present large quantities are imported, but as Lilacs flower so freely in our ordinary English climate, there is no reason why home-grown plants should not be equally good if specially grown for the purpose. I recently saw a quantity of this variety, and every terminal growth was already showing the bloom-buds prominently. Few plants submit to forcing more readily than the Lilac, and when we consider the length of season it may be enjoyed, the facility with which the flowers are blanched, and their delicious sweetness, a largely-increased demand for the flowers may be looked for during the early spring months.—J. Groom.

EVERGREENS WITH LIGHT-COLOURED LEAVES.

If Mr. Stevens had said (p. 143) where he resided, he would have greatly simplified the matter about which he enquires, as many plants hardy in one place are not so in another. In looking through a large collection of evergreens, there is really much more uniformity of colour amongst their leaves than one would expect, and as Mr. Stevens requires handsome flowers as well as good foliage, he asks a rather difficult question, and I am afraid that he will have but a meagre list from which to select. However, as there are many beautiful shrubs whose individual leaves may not be called handsome, but which would still make good contrasts associated with ordinary evergreens, I will just name a few. Berberis japonica (Beali) has very handsome foliage, which normally is of a glaucous green colour, but the upper leaves very often in the winter and spring become bronzed freely with yellow, and in this state contrast beautifully with anything in their neighbourhood. Cassinia fulvida is a distinct free-growing Heath-like plant, whose stems and under leaves are yellow, and which produces heads of white Aster-like flowers in the summer. Ceanothus azureus and C. Gloire de Versailles have both pale green leaves and blue flowers, which appear during summer and autumn. Choisya ternata has very distinct foliage of a light Pea green, and produces beautiful white, sweet-scented flowers in spring. Daphne japonica Mazeli is a free-growing, leafy shrub, pale green, and having the upper portion of each leaf bordered with creamy white; it produces freely in spring rosy flowers of the most delicious sweetness. Escallonia stenopetala alba has light green leaves and terminal bunches of white flowers. Leptospermum lanigerum has pale green, slightly tomentose leaves and bears white Myrtle-like flowers in July. Ligustrum Simoni has the palest green, and, I think, the largest leaves of the tribe, and also white flowers. Laurustinus lucidus variegatus, a handsome shrub, has glossy leaves, which are freely blotched with yellow. Olearia Hasti is a sturdy-growing bush, furnished with small leaves and white flowers. Ozothamnus rosmarinifolius is, in my opinion, the most beautiful white-flowered shrub which we have. Pittosporum eugenioides, Mayi, and tenuifolium are the most distinct and handsome light-coloured shrubs, with glossy foliage, with which I am acquainted, but we can say little about the flowers. P. Tobira, however, has foliage of quite another character and sweet-scented white flowers. Phlomis Russellianus has grey, downy leaves and stems, and terminal heads of bright yellow flowers. Skimmia japonica and oblata. Of these the flowers are not showy; the former, however, bears freely its bright scarlet berries, but requires a cool northern aspect. Several of the above would not be hardy far away from the seaside, except on a wall. All the above are decided shades of green when compared with such shrubs as Rhododendrons, &c.

T. Smith.

Robinia Pseud-Acacia aurea.—This variety, judging by the rate at which it grows, is equal in vigour to the species; and, as compared with other pictorial deciduous trees, it must be considered peculiar. Its leaves are long, narrow, oppositely-lobed, and pendulous; and it does not present, as several other trees do, one mass of golden foliage; on the contrary, only a few of the leaves towards the extremities of the growing shoots are of a pleasing yellow colour, which in turn, and I may say hastily, change to rich green. Its great attractiveness lies in its presenting at all seasons of its growth a sufficient number of golden leaves, which appear like so many sinuous lines of light against the background of its own rich green (older) foliage. It is a magnificent object, and increases in beauty as the season advances, there being towards the close of the growing season a greater contrast between the yellow of the young and the green of the older leaves. It is of good colour now, after all the rain and sunless weather which we have had, but it was much finer last summer.—G. Syme.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Retinospora on Rockwork.—The silver-leaved Retinospora squarrosa makes a fine plant on rockwork, as does also R. Lycopodioides, which is one of the most difficult of the Conifers to grow. In raised positions and planted in good soil it succeeds perfectly.

A Fine-leaved Cypress.—The Cupressus Lawsoniana alba pendula, a variety which was sent out some years ago by Messrs. Paul, of Cheshunt, is one of the most beautiful of Conifers. It grows well, and its fine, gracefully drooping leaves are richly tipped with a silvery sulphur colour. It is remarkably showy, and worthy of a place even in the most select collections of Conifers.

Ceanothus velutinus.—This makes an excellent wall plant. If planted in good soil it grows rapidly, and its large glossy green leaves have always a pleasing appearance. It grows well in London, and would form a good plant for graveyard gardens either grown as a bush or for covering bare walls. We lately saw some fine healthy specimens of it in Messrs. Osborn's nursery at Fulham.

Ligustrum japonicum lucidum.—Grafted standard high on the common Privet, this is equal in effect at this season to a well-grown Lilac. We lately saw plants of this description in Mr. Paul's nursery at Cheshunt, the heads of which were literally studded with large trusses of white blossoms, which last in good condition for a considerable time. This Privet is well worthy of being planted largely in fronts of shrubberies or in other conspicuous positions.

Hydrangea paniculata grandiflora.—Several complaints have been made respecting the non-flowering of this shrub this season, a circumstance attributable probably to the plants complained of having got into a poor condition. For its best development it requires to be cut back freely in the spring just as one would prune a Rose bush, to be well fed, top-dressed or otherwise with rotten manure; in fact, to get the strongest possible shoots, and to develop them to the fullest extent, in order to obtain large trusses of bloom. —T. Smith.

Treatment of the Umbrella Pine.—The Umbrella Pine (Sciadopitys verticillata) grows luxuriantly at Cheshunt planted in pure peat. Abundance of water is given to it during dry weather, and when it becomes necessary, some of the natural soil is taken away from near the root and replaced by peat.

Two Good Avenue Trees.—A very good effect is produced by specimens of the Golden-leaved Poplar and the Purple-leaved Birch, planted alternately. The Poplar grows rapidly and is a most useful tree. The Birch assumes a pyramidal habit; its branches are light and graceful, and its leaves of a dark purple-bronze.

The Purple-leaved Peach.—When grown in the form of a standard this is very effective, either in shrubberies or in isolated positions. Associated with the white-leaved Acer Negundo variegatum, it would form a striking contrast. It grows freely in Messrs. Osborn's nursery at Fulham, where its appearance, as regards colour, reminds one of that of the well-known Iresine Lindeni.

The Tamarisk.—In flower gardens this maritime shrub is usually seen in the form of a dwarf bush, which is annually headed down; and, thus treated, during summer and autumn its light green feathery spray has a pretty effect. It also looks well as a wall plant if closely spurred in in winter. In positions where even Elms and similar hardy trees assume a burned look the moment they get above the shelter of a wall or other fence, this plant flourishes, and seems to enjoy the bracing atmosphere. Therefore, wherever evergreens become seared or blighted, it is good policy to make the best use of plants that flourish in the locality under ordinary conditions.—J. G.

Eugenia apiculata.—There is at Ravensdale Park, near Newry, a very large specimen of this, at least twenty years old I should say, growing on a wall, and every season it is loaded with large terminal bunches of white flowers, which are succeeded by an abundance of jet black fruit, of which the birds are very fond. This shrub seems to be quite hardy in all sorts of positions; it grows very freely, and when planted side by side with narrow and broad-leaved Myrtles, it does not get injured even when they are severely cut up.—T. Smith.

HILLFIELD, REIGATE.

In looking over the garden at Hillfield, Reigate, the other day, I was much charmed with the effect of Taxus adpressa. It is a beautiful object, rolling over tier upon tier down the bank which bounds the terrace. It will bear cutting freely, but its beauty comes out most when naturally spreading down a slope. Fourteen years ago the plants were about 3 ft. across; now they are 12 ft. to 14 ft. I was also much struck with the rapid growth of a tree of Wellingtonia gigantea. I planted it in 1858 from a pot; it was then 3 ft. high; it is now (August 1878) between 40 ft. to 50 ft., clothed to the ground with a base 4 ft. in circumference. The soil these plants are in is a soft burr-stone just below the chalk hills. There are also two fine plants of Abies excelsa elegans, about 25 ft. This is an exceedingly graceful variety. One feels grieved to see a place so rich in plants of all kinds left in the hands of unappreciative owners. The weakest plants are allowed to go to the wall and the strongest spoil for want of space. It is, however, a treat to go into a garden like this where a man of taste has lived, and find so many subjects new and rare at every turn, even though their friends have gone. It is so interesting in comparison with ordinary places, where Laurels, Rhododendrons, Roses, Pelargoniums, Fuchsias, and the like swamp everything else; not that these plants are not extremely beautiful in themselves, but because so much of one thing offends the sense of beauty and harmony. I see no reason why all gardens of moderate space should not give a home to, if not collections, at least selections of hardy herbaceous and Alpine plants, hardy trees and shrubs, Coniferæ, Ivies, and other hardy climbers, Ferns, Grasses, bulbous plants, and the like. At Hillfield there are plants of Fuchsia Riccartoni 8 ft. high; there the various forms of Cotoneaster rotundifolia abound, and the Acanthus is quite at home in company with hardy Oxalis and the Megasea section of Saxifraga. On the banks the several varieties of Helianthemum grow in grand masses, and in the bottoms Gynerium and Arundo conspicua do exceedingly well. In the damp parts Arundinaria falcata waves gracefully in the breeze, and Equisetum fluviatile grows wild here; this latter is worth an effort to establish in any place on the margins of water. One thing I noticed in this place that is a common but a sad error, that is, that fine specimens are spoiling and in danger through the encroachment of unimportant trees or shrubs that were originally planted for nursing or protecting the others only. The want of boldness in cutting away such in time, often ruins the best places for all time. J. Croucher.

Sudbury House, Hammersmith.

Forcing by Smoke.—Senhor Ernesto do Canto, of the Pine-apple and Orange-producing island of St. Michael, contributes an interesting article to the "Illustration Horticole" of Ghent, in which he shows that wood smoke has an important and beneficial influence on the growth of plants. In the island of St. Michael some 30,000 Pine-apple plants supply the English markets with their delicious fruit every year; and as the prices which are fetched in winter are higher than at any other time of the year, the St. Michael's growers have adopted a system of forcing which enables them to keep pace with the demand. Some of the growers tried the application of artificial heat below the roots in a very scientific manner, while others adopted the rough-and-ready method of growing them in houses heated by open *braseiros*, in which wood or charcoal was burnt. It was soon discovered that whenever a hothouse was constantly filled with smoke from the burning wood the plants flowered at least a fortnight earlier than when a more scientific mode of heating was used. Even freshly-struck suckers began to flower prematurely under this method of treatment. The fact seems to admit of no doubt, for the whole of the growers, even those whose hothouses were heated with the most modern appliances, have adopted the plan of keeping their forcing houses constantly filled with the smoke of burning straw or wood chips. It would be interesting to know whether the active agent is the smoke itself or the carbonic acid produced along with it by the burning wood or straw. M. Georges Ville, the eminent French agricultural chemist, tells us in his "Engrais Chroniques" that Caladiums grown in an atmosphere strongly charged with carbonic acid and ammonia increase and multiply at an astonishing rate, and Senhor do Canto's observations appear to confirm his statement. In any case the experiment is easily tried.—C. W. Quin.

Blackheath.—The improvement which the Metropolitan Board of Works has effected on the Heath by the simple process of leaving Nature alone is now fully apparent, for the old gravel-pits have grown into green and pleasant dells; the rusty clumps of trees and Furze bushes have become picturesque features of the scenery; and the stagnant ponds, through which the horses used to splash, have been converted into lakes, dotted with small islets, blooming with Hollyhocks and Nasturtiums.—"Standard."

ROSES.

THINNING ROSES IN AUTUMN.

On examining our Roses recently, it occurred to me that it would be a great advantage if, instead of deferring the thinning out of the shoots until the spring, we performed that operation in autumn. Other plants are benefited by skilful thinning, and why not Roses? The late dry weather has affected the prospect of a good Rose harvest next season; the plants have suddenly ceased to bloom, although they looked all that could be desired before the hot weather set in. Our soil is light, and therefore we felt the effects of the dry weather much more on that account; and, to make matters worse, for appearance sake we removed a thick mulching from off the surface of the beds just before the hot weather set in. The effect of this was such, however, as to induce us to re-mulch and syringe overhead every evening, in addition to watering at the roots. The result of this second mulching was most satisfactory, and, a change of weather occurring as well, our Roses made, and are still making, excellent growths; some are, however, sickly, and others will die outright, but these are fatalities that must be looked for more or less after periods of severe drought. But cannot we assist them by removing all weakly superabundant shoots in good time in the autumn, and thus direct the energies of the plants into a limited number of stems according to their size and vigour? The autumn thinning of Roses, instead of being general, is, as a rule, only recognised by Rose growers who make a speciality of their culture. Hitherto it has been my practice to thin out all weakly shoots early in spring, and to leave the shortening back till the ordinary pruning time. This practice, though good in its way, falls short of what it ought to do, because we allow the plants to waste their vigour in sustaining an unlimited number of weakly and, for the most part, flowerless shoots. The experiment will be found to work beneficially, especially if, in addition, the roots are well supplied with weak liquid manure. It is really too much to expect good Roses under a system which does not recognise the limitation of the shoots and the feeding of them during the process of formation. But what about a supply of Rosebuds in autumn? Well, provision must be made for obtaining them either by having two sets of plants or, if the collection be a small one, by working it on a sort of compromise principle in accordance with circumstances. No one who has two or three good old plants of Souvenir de la Malmaison or Mrs. Bosanquet planted in a warm sheltered situation need be short of a Rosebud from the month of May till Christmas. W. Hinds.

NEW FRENCH ROSES.

The following is a list of new Roses which I saw on my visit to France last June:—

Boieldieu (raised by Margottin).—Hybrid Perpetual; very much like Paul Neron, but not quite so large; very full, fine form. I think this will be a fine Rose for exhibition.

Alfred K. Williams (Schwartz).—Hybrid Perpetual; carmine, large, full, and fine form.

Edouard Dufour (Levique).—Hybrid Perpetual; deep crimson red with brownish shading; large and good form.

Marie Louise Pernet (Pernet).—Hybrid Perpetual; very high-coloured, large, and fine in form; a very fine Rose.

Gloire de Bourg-la-Reine (Margottin).—Hybrid Perpetual; dark velvety crimson, a beautiful colour, not very full.

Souvenir de M. Poiteau (Margottin).—Hybrid Perpetual; bright cherry-rose, large, and fine in form; good exhibition Rose.

Dr. Krell (E. Verdier).—Hybrid Perpetual; bright red slightly shaded with purple, medium size, form good.

Edouard Pinaert (Schwartz).—Hybrid Perpetual; bright red, velvety, and of a globular form.

Grand Duke Nicholas (Levique).—Hybrid Perpetual; bright vermilion, fine in form, and good size; a promising Rose.

Madame Jeanne Bowyer (Gonod).—Hybrid Perpetual; pink, large, and fine in form.

Madame Louis Donadine (Gonod).—Hybrid Perpetual; flesh colour, darker in the centre, large, and fine in form.

Souvenir d'Adolph Thiers (Moreau).—Hybrid Perpetual; bright red, shaded with vermilion; good in form.

Dames Patronesses d'Orleans (Vigneron).—Hybrid Perpetual; crimson-red, medium size, not very full.

Princesse Blanche d'Orleans (E. Verdier).—Hybrid Perpetual; red, slightly shaded with purple; medium size, good in form.

Mons. Gabriel Tournier (Levet).—Hybrid Perpetual; deep carmine, flowers globular, and very sweet-scented; a fine Rose.

Duchesse d'Ossuna (H. Jamain).—Hybrid Perpetual; rosy-vermilion, very bright in the centre, not very full; after the way of Etiénne Levet.

Charles Baltet (E. Verdier).—Hybrid Perpetual; carmine, full and fine in form, and very fragrant.

Cannes la Coquette.—Hybrid Perpetual; salmon colour, shaded with red, large and good in form, quite a novelty; a promising Rose.

Princesse Charlotte de la Tremoille (Levique).—Hybrid Perpetual; satiny rose, good size; something after the manner of La France.

Madame Jeannie Joubert (Margottin).—Hybrid Perpetual; carmine-red, medium size, good in form.

Madame Gabriel Luizet (Liabaud).—Hybrid Perpetual; satiny rose, medium size, full, and of good form.

Madame Chevrot (Pernet).—Hybrid Perpetual; rose-pink inclining to salmon; very good in shape.

Madame de Laboulaye (Liabaud.)—Hybrid Perpetual; lightish rose, brighter in the centre, large and full.

Bathélemi Joubert (Robert Moreau).—Hybrid Perpetual; brightish red, large, and of good form.

Constantine Tretiakoff (H. Jamain).—Hybrid Perpetual; cherry-red, darker in the centre, medium size, and of good form.

Madame Anna de Besobrasoff (Nabonnand).—Hybrid Perpetual; white, centre pink, medium size, imbricated form.

Madame Anna de Besobrasoff (Gonod).—Hybrid Perpetual; dark red, shaded with purple; large and full.

Madame Maria Verdier (E. Verdier).—Hybrid Perpetual; satiny rose, large petals; in the way of Marquis Castellane.

Souvenir d'Auguste Rivière (E. Verdier).—Hybrid Perpetual; velvety crimson-red shaded with maroon; very fine in colour; flowers well formed.

Princesse Lise Troubetskoi (Levique).—Hybrid Perpetual; light rose, petals edged with white, well formed; a promising Rose.

President Schlachter (E. Verdier).—Hybrid Perpetual; velvety crimson, shaded with purple, large, and of very good form.

Madame Albani (E. Verdier).—Hybrid Perpetual; brightish red; a fine-looking flower.

Clement Nabonnand (Nabonnand).—Tea; cream-yellow, shaded with lilac.

La Comtesse de Caserta (Nabonnand).—Tea; copper red; flowers large, not very full.

Louis Richard (Ducher).—Tea; coppery-rose, reddish in the centre; a promising Tea Rose.

Mdlle. Noelie Merle (Nabonnand).—Tea; buff-yellow shaded with carmine; a fine Rose, somewhat in the way of Gloire de Dijon.

Madame Nabonnand (Nabonnand).—Tea; white shaded with rose, good habit; a promising Tea Rose.

La Sammonné (Margottin).—Hybrid climber; salmon-rose, medium size, good in form.

Madame Bernaix (Guillot).—Hybrid Tea; high-coloured rose petals edged with white, good in shape; awarded a silver medal.

Madame Lambard (Lacharme).—Tea; bright red, large and full.

Madame Durreschmidt (Guillot).—Hybrid Tea; white tinted with salmon-rose, large and full; awarded a silver medal.

Madame Pittet (Lacharme).—Hybrid Noisette; white, of a globular form; gained the first prize at Lyons. R. S.

Button-hole Roses.—Of all button-hole Roses none are more charming than the medium-sized buds of Catherine Mermet. The colour is a pale rosy-pink, and the form of the flower perfection. It is one of those hues that suit any coloured coat. A number of Tea Roses under glass are just now throwing up their latest growth; this produces small buds that are the most suitable of all for button-holes.—A. D.

Climbing Roses.—In the gardens at Bassett, Southampton, some robust climbing Roses planted some years since close to the stems of Scotch Fir trees have grown so strongly, that they have extended up into the higher branches, and have spread themselves over the trees, and when in bloom they are said to have an attractive appearance, a fact which can well be imagined, as the light-coloured flowers could not fail to look effective amidst a setting of deep green Fir leaves. This combination is worth the attention of those who have wild gardens, as in such places the Rose should be allowed to grow naturally and wildly, and as luxuriantly as does the common

Bramble in hedgerows. The many strong-growing Noisettes, such as Gloire de Dijon, Jaune Desprez, Lamarque, and others are specially suited for such a purpose.—A. D.

THE HORTICULTURAL COMPRACHICOS OF JAPAN AT THE PARIS EXHIBITION.

In that fascinating nightmare, *L'Homme qui Rit*, Victor Hugo tells us that in the seventeenth century there existed in Europe a band of nomads, known by the name of comprachicos, or children buyers, whose special handicraft was the transformation of their unhappy purchases into dwarfs and monsters for the particular delectation and amusement of popes and princes. In the nineteenth century, in our own corner of the world, at any rate, the comprachicos are luckily as obsolete as the rack and the thumbscrew; but the practice of interfering with Dame Nature in her benevolent occupation of strewing our path with things of beauty which are joys for ever still thrives in Japan. The daimios of Yokohama and Nagasaki are not content with the countless beautiful gems of the plant world with which their favoured islands are studded, but they must also have dwarfs and monsters of the vegetable kingdom. They must have Pine trees with the best part of their roots leaping up into the air several feet higher than their topmost twigs, or Kakis with their branches so contorted as to resemble tangled masses of cordage instead of the graceful trees which we know them to be. In the "Revue Horticole" for July 16, Mons. E. A. Carrière gives a long and interesting account of the dwarf and monster plants shown in the Japanese section of the Paris Exhibition. These vegetable abortions have hitherto only been known to us through the medium of the metal and fictile wares of that wonderful country. M. Carrière admits at starting that he can only guess at the methods used by the Japanese comprachicos for producing these vegetable monstrosities, which not only include dwarf plants, but also shrubs and bushes of tender years, which wear a feeble and venerable appearance long before the natural time. Figs. 1, 2, and 3 are good examples of this peculiar development of the art of horticulture. M. Carrière supposes that when the Japanese wish to dwarf any particular subject they naturally choose those varieties which most lend themselves to being checked in their growth by various means. By training their shoots and branches with the utmost patience, they are able to produce the most monstrous forms, while by limiting the amount of nourishment which the plants receive within the narrowest possible limits they become dwarfs. Hence, by adopting the latter method, of checking their growth, they succeed in producing plants which, although they may be over a century old, are still small enough to live and thrive in a medium-sized flower-pot. We must also remember that the climate of Japan is peculiarly favourable to this description of horticulture, and it is doubtful whether this kind of culture could be carried out in hot, dry, sunshiny countries. Of all hardy subjects the Conifers seem to have produced the most successful specimens of dwarfs and monsters, either because they are more fitted for this mode of treatment, or because they are more in favour in Japanese gardens. Amongst the Conifers again Pines seem to produce the happiest results. As seen in figs. 2 and 3, the stem, which is reduced to its very simplest expression, grows at a distance from the surface of the soil, and is supported by a number of simple or branched roots supported by sticks, which float about in the air as if they belonged to it. The results shown in figs. 1, 2, and 3 are difficult to explain, especially that which, as will be seen, sends up a root from *b*, which, bending round in the form of a syphon at a distance of 2 ft. or 3 ft. above the plants, descends once more as far as *a*, where it splits into a number of branches, if such a word may be applied to a root, and descends into the soil contained in the pot, whence it conveys nourishment to the plant by the circuitous path shown in the cut. In the majority of cases it is difficult to fix the exact spot at which the root ends and the stem begins, as they seem to run into each other. If we carefully examine fig. 3 we shall apparently find that the end of the root-stalk is at *a*, and that from thence to the point *b*, where the cotyledons formerly existed, the part may be considered the collar, so that below this point we may still find a portion of the root-stalk, which, becoming thinner, is easily confounded with the roots properly so called. As shown in figs. 4, 5, and 6, the branches and shoots constituting the head of the tree may be contorted by training into the most extraordinary dwarf and monstrous forms; in fact, everything is done to prevent them from growing in a vertical or horizontal direction. This system of culture seems to be very widespread throughout Japan, and must be practised by a large number of persons, for such specimens as the one shown in fig. 1 are exhibited by hundreds. Worried literally half out of their lives by ill treatment and starvation, it is not to be wondered at if the size of some of these unhappy victims are wholly out of proportion to their age. For instance, the puny-looking plant shown in fig. 1 is ten years old, while that represented in fig. 2 has seen at least eighteen summers; and the Pinus in fig. 3 nearly trebles that age. The monstrosity shown in fig. 4 is thirty-four years old, and the Nageia (fig. 5) is only five years younger. These ages, it must be observed, are only approximative. Although the Pines seem to be particu-

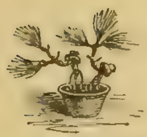


Fig. 1.—Two young plants of Pinus densiflora, deformed.

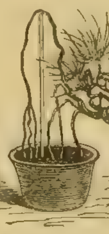


Fig. 2.—Specimen of Pinus densiflora, with the larger portion of the roots growing in the air.

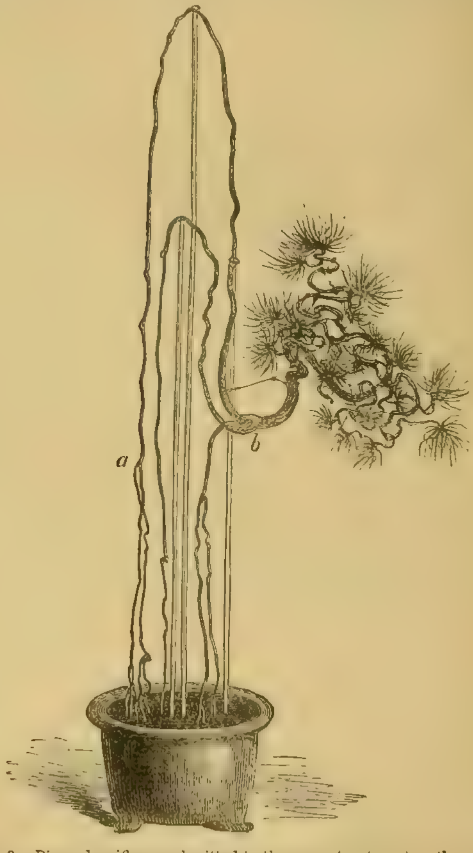


Fig. 3.—Pinus densiflora, submitted to the same treatment as the specimen shown in fig. 2 (1-5th the natural size).

larly amenable to this mode of treatment, there are other members of the family of the Coniferæ which are also capable of gratifying the perverted tastes of the Japanese aristocracy, such, for instance, as the Chamæcyparis, the Podocarpus, and even the Nageia (as shown in fig. 5). It is clear that other species of Coniferæ may be submitted to the same process with similar results. This peculiarity of the Coniferæ, no doubt, is caused by the fact of their having excessively long roots, as any one who has grown Pines in pots can readily testify. Without positively asserting anything, M. Carrière gives it as his opinion that the whole secret lies in the choice of subjects with extremely long roots; and in support of it he instances the fact of a seedling Cedar, which was sown in heat in a tube containing Moss, out of contact with the air, and which, in a very short time, produced roots 18 in. or 20 in. in length. It must also be remembered that as the Japanese do all they can to check the growth of the aërial half of the plant, the subterranean portion must necessarily become unnaturally developed. The singular results shown in figs. 1 and 3 lead one to inquire as to whether the effects are obtained before or after the plants are placed in pots. Be this as it may, it is perfectly evident that some means are taken to draw the roots out of the soil gradually, without in any way damaging the rootlets, so as to expose all their ramifications to the air, leaving only a small portion of their extremities in the soil. It is not only in ornamental plants that the Japanese Comprachicos work their wicked will, for they apply the same system of dwarfing to fruit trees—first of all in a natural way, by tying the branches together in such a manner that they grow inwards instead of outwards; and, secondly, in an unnatural manner, by excessive pruning, or by checking their growth one way or another. Judging from the specimens shown in the Trocadero and at the Jardin Fleuriste, the fruit trees best adapted for this method of treatment seem to be Kakis, Peaches, Plums, and Cherries. The Kaki seems to be designed by Nature for the especial purpose of being dwarfed and otherwise deformed. Some of the specimens exhibited are very dwarf, being only from 16 in. to 30 in. in height, but they are covered with flowers, and, judging from the condition of the shoots, they must have fruited abundantly. In growing fruit trees, the Japanese follow the method adopted by our western fruit growers, and leave only from six to twelve fruits on each tree, according to its natural vigour. Another peculiarity of these dwarfed and deformed trees is that their roots, as a whole, are very small, the subterranean portions being comprised in a few small tufts of rootlets. It is impossible to say whether this is the result of checking the growth of the aërial part of the plant or of perpetual transplanting, so as to keep the subject, so to speak, in a constant state of ill-health. In the absence of any trustworthy information on the subject, we can only surmise that both these methods are practised.

C. W. Quin.

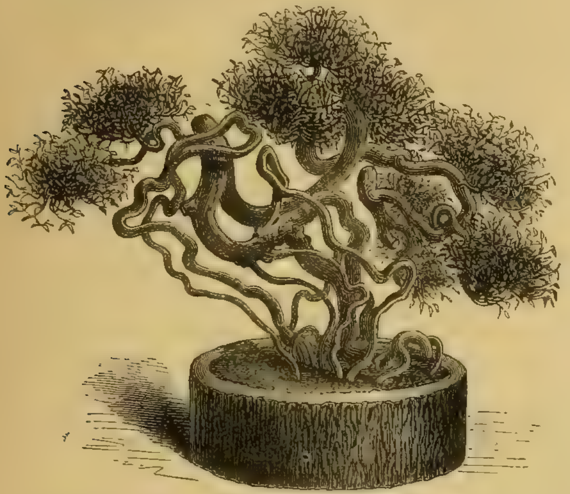


Fig. 4.—Stunted and deformed specimen of Rhynchospermum japonicum.

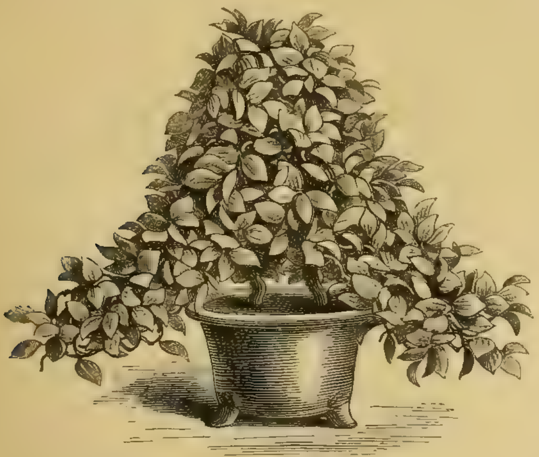


Fig. 5 —Nageia ovata in a Japanese flower-pot, with the branches growing downwards (1-8th the natural size).

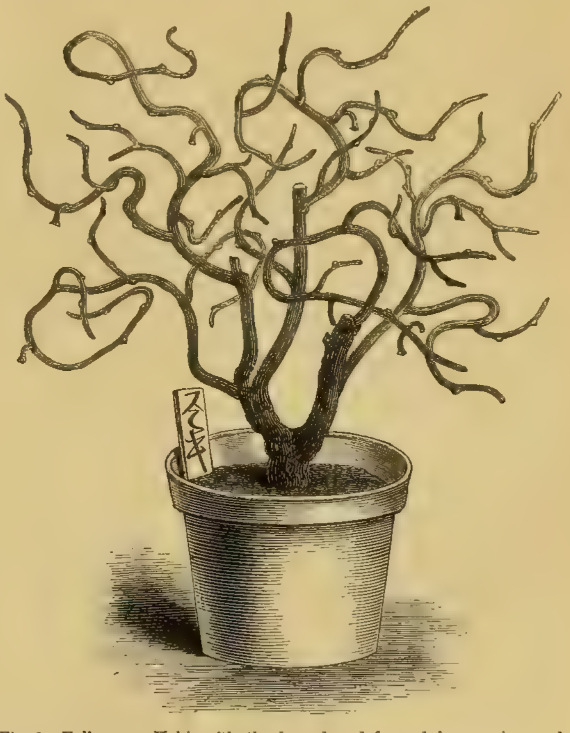


Fig. 6.—Full-grown Kaki, with the branches deformed by pruning and training, bearing here and there fructiferous peduncles.

A Good Way of Keeping Cut Flowers.—A simple and easy way in which to arrange cut flowers for side-boards, &c., is to get a flat wicker punnet, line it with Moss, and fill up the middle with sand. In this the stalks of the flowers can be inserted, not only on the top, but also through the apertures in the sides of the punnet; the whole can then be set in a dish of water, which may be changed as often as desirable. This is a much better way than having to wet the sand or remove the flowers to change the water, and they keep much longer fresh.—S.

THE FLOWER GARDEN.

FLOWER GARDENING IN BATTERSEA PARK.

Although the weather has been unfavourable for flower gardening this season, this park looks as well as we ever remember to have seen it. Sub-tropical and carpet gardening are extensively represented, and even the shrubbery borders in places have been improved. In some cases, Pelargoniums, Heliotropes, and other plants have, owing to the excessive rainfall which we have had, grown into each other, so as to produce a mixed and rather weedy appearance; but, speaking generally, Battersea still holds the foremost place amongst the London parks as far as gardening is concerned. The sub-tropical arrangements under the shade of trees are very satisfactory, the plants being plunged round them in such a way as to leave little valleys of turf between them. Amongst other plants employed for this purpose are glaucous-leaved Zamias, Pandanus Veitchi, Cycads, and Bird's-nest Ferns. Stag's-horn Ferns grown on blocks of wood plunged in the turf are very effective, the blocks themselves being hidden by plants of Ampelopsis Veitchi or some other creeper. Dicksonias have not done so well as we have sometimes seen them here, and Musas have been sadly cut to pieces by the wind. Groups of Cannas just coming into flower are vigorous and healthy, especially those which have been kept in the ground undisturbed for a year or two. Asplenium bulbiferum is used with good effect in arrangements under trees, and, considering how easily and rapidly this Fern can be increased, it might be more frequently employed for such purposes than it is. Large, flat beds of Wigandias, planted 4 ft. or more apart, are very effective, the plants being from 3 ft. to 4 ft. high, and furnished with massive, healthy leaves. An undergrowth of Plumbago capensis, Lantanas, and variegated Veronicas, edged with silver-leaved Pelargoniums, and a final edging of the green-leaved Geranium tomentosum, makes this one of the best arrangements in the park.

Another handsome bed is a round one filled with tall plants of Dracæna liniata, and an undergrowth consisting of Iresine Lindeni grouped amongst white-leaved Everlastings, the whole encircled with a band of the silver-leaved Chamæpuce dicantha set in round cushions of Sedum glaucum edged with Aloe altunata, the final edging being of Golden Feather, through which runs a narrow band of Alternanthera amœna. A raised bank with a background of Cannas, a foreground composed of Aralia Sieboldi, A. s. variegata, and A. papyrifera, and an edging of green-leaved Funkias was very effective. Another bank similarly arranged opposite leaves a valley of turf between, in which are planted small groups of Palms and succulents. Giant Hemps, from 10 ft. to 12 ft. high, have been used in several places with good effect. On a raised bank of a small shrubbery was a bed of tuberous-rooted Begonias, the best which we have yet seen out-of-doors. They consisted of mixed kinds of various colours, and amongst them were planted Fuchsia fulgens, the lace-leaved Cupania filicifolia, and Abutilons, the whole being encircled with a band of bicolor Pelargoniums and edged with Nierembergia gracilis, which is allowed to spread gracefully over the edges of the turf. Another effective bed consists of tall plants of Acacia lophantha and Arecas, with an undergrowth of Eurya latifolia, finely-coloured Abutilon Darwini tesselatum, and the golden and crimson-leaved Fuchsia Sunray. Polymnia grandis is one of the finest of sub-tropical plants; it has here already reached from 4 ft. to 5 ft. in height, and is furnished with very large, half-drooping, deeply-cut leaves.

Well-formed standard plants of Yucca aloifolia variegata, planted in round beds of mixed Coleuses, are very effective, as are also some oval beds planted with Grevillea robusta, springing from amidst a thicket of the variegated Vine, and edged with the golden-leaved Japanese Honeysuckle, a broad band of Alternanthera, and a final edging of Sedum glaucum variegatum. Examples of the white-flowered Brugmansia, planted in a large group in raised positions, are flowering freely, and contrast strikingly with their surroundings. Amongst beds on a bank was one with a raised Ivy edging, next to which was a band of silver-leaved Pelargoniums, and behind that a row of well-developed plants of a golden-leaved Fuchsia, and a good breadth of mixed flowering Fuchsias interspersed with robust plants of Begonia ricinifolia, backed up by finely-developed specimens of Aralia papyrifera, the effect of the whole being much enhanced by a background of bright-leaved Hollies. Epilobium hirsutum variegatum, an excellent plant, is used here for the adornment of the edges of shrubberies. It grows from 2 ft. to 3 ft. high, and its leaves, which are almost white, contrast well with the blue blossoms which it bears in profusion.

Plants of Ficus repens, springing from a thicket of well-flowered Balsams, have a fine appearance where edged with rose and scarlet zonal Pelargoniums and the variegated Gazania splendens. Plants of Clematis Jackmanni, associated with the Canary Creeper and allowed to run wild over stakes and tree stumps, form an attractive feature.

Hibiscuses are not yet so full of bloom as we may expect to find them before the season is over, but grouped on a bank, backed up with Hollies, &c., and edged with gold-leaved Fuchsias, rose-coloured Pelargoniums, and Centaurea maritima, they are very showy. Fuchsia Carters' Meteor is used in several instances as an edging plant; its leaves are of bright crimson and gold, and when the plant is kept well pegged down they are very showy. A large, round bed planted with Yucca aloifolia variegata, Aloe frutescens, Echeveria metallica, and Sempervivums arranged in round groups on a carpet of Herniaria glabra, encircled with small plants of Echeveria secunda glauca, the whole being sunk in a groundwork of green Mentha, with a centre plant of a glaucous-leaved Dasylirion, has a good appearance.

Amongst the most attractive examples of carpet gardening was a long bed with small, oval-shaped groups of Alternantheras along the centre, and surrounded by a band of Pyrethrum Golden Feather; next to this was a line of Kleinia repens, then a band of Sedum glaucum and another line of Kleinias, the remainder of the space up to the Grass being filled up with Golden Feather—a good and effective arrangement. In the shrubbery borders we notice mixed Petunias, Dahlias, Tritomas, Godetias, Sweet Peas, and similar plants, which are much more suitable for such purposes than long lines of Pelargoniums and other bedding plants. Some of the dwarf-growing Sages are also allowed to grow over the Grass margins with good effect. Into the Alpine garden has been introduced several graceful Palms, but, altogether, it is a poor specimen of what a good Alpine garden should be. We remarked that many of the bare spaces under large trees had been planted with Yuccas and edged with Echeverias, an improvement in the right direction. S.

BEDDING PELARGONIUMS.

Amongst all the plants that have at various times been used for the decoration of the flower garden none have retained their popularity like the Pelargonium. It has not only held its own as a flowering plant, but has nearly monopolised the space devoted to other bedding plants by driving the Calceolaria and Verbena off the field. A list of some of the most noteworthy at present to be seen in Hyde Park and other large floral displays may be serviceable to those readers who have not the opportunity of personally inspecting the beds. I may remark that each bed or pair of beds is planted with one variety only, and all are edged alike—viz., a double row of Echeveria glauca next the Grass, and a row of blue Lobelia next the Pelargoniums. There is one simple point of culture that often mars the good effect of even the best beds of Pelargoniums, and that is, allowing the old flowers to remain on the plants too long, whereby a shabby, seedy aspect is imparted to the beds; and the formation of seed-pods being a very exhausting process, the successional display of fresh blooms is much retarded. I have appended a selection of varieties, mostly of recent introduction and of great improvement in form of flower, habit, substance of petals, and brilliancy of colour, that bear ample testimony to the care of the hybridiser and of the success that has waited on the efforts of Dr. Denny, Pearson, and others. I may also add that for pot culture under glass these varieties are excellent; and in midwinter a house filled with the many shades of crimson, scarlet, pink, salmon, and white is a cheering sight. It is worthy of remark that hybridising Pelargoniums has not only improved the flower, but a sturdier habit of growth, with stiff, erect footstalk, has been acquired, rendering the plants altogether better adapted for decorative purposes and withstanding the vicissitudes of wind and rain to which they are subjected.

Deep Crimson.—General Outram, Mrs. J. George, Caxton, Dora Charlton (white eye), David Thomson (white eye), Pirate, Wellington, John Fellows (crimson-lake), Brutus, Bonfire (scarlet).

Pink.—Lady Sheffield (lilac-pink), Lucy Bosworth, Mrs. Turner, Amaranth, Annie Horton, Master Christine.

Salmon.—Ellen, Maurice Bernardin (light edge), Miss Strachan, Pantaloon (flaked white).

Scarlet.—John Gibbons, Mrs. Hetley, Ernest, Princess of Wales, Captain Holden, Lucius, Harry Hieover, Vesuvius, Mrs. Huish, Waltham Seedling, Star of Fire, Lord Derby.

White-variegated.—Albion Cliffs, Mrs. Kingsbury, Princess Alexandra, Queen of Queens, Flower of Spring.

J. Groom.

THE NEW ZEALAND FLAX IN SCOTLAND.

I have now grown this magnificent decorative plant out-of-doors at Castle Kennedy for upwards of twenty years, and the more I see of it the better I like it. As a distinct, striking, ornamental, free-growing hardy plant, it has no equal here. Many of the specimens first planted from large masses from 3 ft. to 4 ft. in diameter, with crowds of upright, long, sword-shaped light green leaves, throwing up every season flower-stems 10 ft. or 12 ft. in height, loaded in autumn with their Bean-like pods, and in most seasons ripening abundance of fertile seeds. This Flax has of late years been extensively and successfully used here. It thrives well in a great variety of soils, preferring a moderate loam to a tenacious clay. In mossy soils it is quite at home, as also in light loams, if not too dry. It thrives much better in a moderately sheltered than in an exposed position, but when planted in an exposed situation, if the leaves are tied together during the winter and early spring months, and slightly protected with a few branches, it thrives surprisingly. In planting in cold localities, a site neither very high nor very low should be selected. I prefer the latter end of April for planting in permanent positions. Strong, well-established plants should be selected, and some slight protection given for a few weeks, till the plants get well established. If the weather be dry, an occasional watering will be beneficial. When planted, as is too often done, during the autumn or winter, they are almost sure to succumb to the first severe weather, especially if the plants are small, and the plant is unjustly pronounced to be "not hardy." I do not mean to assert that in every locality this highly ornamental fine-foliaged plant will prove quite hardy. In inland and highly elevated situations our winters may be too severe for it, but in the warmer and less elevated situations, particularly near the sea-coast, it should be extensively experimented with, and where it succeeds it will well repay the trouble of those who interest themselves in its cultivation. Seeing that the normal species did so well here, I procured eight or ten years ago a few plants of the variegated sorts, and planted them out-of-doors in a warm sheltered situation. The result is that they grow nearly as freely, and are quite as hardy, as the common variety, the variegation being all that could be desired. This year we have introduced some of them as centres of beds in the flower garden with good effect, and I propose shortly breaking up some of the old plants for propagation, and thus largely increasing our stock of variegated plants; others we propose to grow for flowering, when interesting variegated seedlings may justly be expected to follow.

A. Fowler, in "Florist."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Tropæolum speciosum.—This charming creeper is now flowering profusely in Messrs. Ker's nurseries at Grassendale, planted against the wall of their seed shop. It is creeping up a plant of the common Honeysuckle planted against the same wall, and the combination is most effective.—W. Hinds.

Growth of Lily Bulbs.—Since writing the words quoted by "Dunedin" (see p. 140) I have read his subsequent papers upon the above-mentioned subject, and have also had myself a little further experience of Lily bulbs, and I now beg to thank "Dunedin" for his kind explanation as to the appearance of my bulb of Lilium auratum in September, with which explanation I now entirely agree. In support of his theory that the old bulb, though still in existence in September, is nevertheless moribund and about to give place to the new bulb within it, I would mention that last autumn I potted a bulb of Lilium auratum obtained from Stevens' apparently in good condition, but, finding that late in the spring it had made no growth, I removed the earth and examined it. The outer scales were much decayed, in fact, rotten; and fearing that the process might extend to the inner scales I removed all that were at all affected, and by this means reduced the bulb to about one-half its former size. I then re-planted it in fresh earth, and in due course it sent up a stem, which has now two blooms upon it. If this bulb had been perennial, *i.e.*, dependent upon itself for existence, and not upon a successive and distinct growth, as maintained by "Dunedin," I cannot think that it would have survived the treatment above mentioned, or, at all events, that it would have had strength enough to flower this season. —W. J. T., *Brixton.*

Yuccas in Clumps.—Few plants look better in isolated clumps on Grass than the different varieties of Yucca. Being very distinct as regards habit of growth, they contrast strikingly with almost any kind of vegetation by which they are surrounded. The stiff erect habit of Y. gloriosa, or the elegant curved leaves of Y. recurva, constitute, in young vigorous plants, the best examples of what a free-grown symmetrical plant ought to be without training, and after the plants flower and lose their symmetrical proportions, they branch into many crowned heads, thus producing a quaint and picturesque aspect; they also send up a colony of root suckers around the parent plant, and soon make a clump presentable at all seasons of the year.—J. G.

American Dog's-Tooth Violet (Erythronium americanum).—I notice (Vol. XIII., p. 484) that some of your correspondents speak of this pretty plant as being very shy in blooming. It grows wild in great abundance in some parts of our grounds, and in the spring it comes up in large patches, which are covered with its yellow blossoms. I notice, however, that it flowers more freely in open places and in a light peaty soil than in shady spots and heavy soil; sometimes nothing will be seen of it when the ground is cultivated for a year or two, but as soon as it is left alone it springs up in its former abundance.—C. M. Hovey, *Boston, Mass.*

Herbaceous Plants on the Chalk in 1878.—The copious showers and gleaming sunshine which characterised the later spring and early summer months of the present year have caused certain plants to be unusually flourishing and floriferous on the arid chalky soil upon which I have the misfortune to live. The double purple and French white varieties of Hesperis matronalis have been a perfect sight, but have been hard run by the double-flowered form of Spiræa Ulmaria. A plant of Ophrys hircina, just now going out of bloom, is more than 2 ft. high. Monarda purpurea towers in purple glory to about 4 ft Lilium superbum has been very fine, and so has Chrysobactron Hookeri, which I have hitherto utterly failed to bloom in the open border. Oxalis Deppei, lasiandra and vespertilionis, mauritanica and floribunda, have been beautiful from breakfast to noon, and Erodium absinthifolia and macradenium have been unusually fine. Orchis latifolia incarnata and maculata superba were grand. Anemone narcissiflora was the admiration of everybody, and A. rivularis has far exceeded its usual stature. Brugmansia sanguinea and lutea, which have both stood the winter, are 3 ft. high, and the latter has a bud nearly ready to open. The hot sun of the last few weeks has been very fatal. All my plants of Meconopsis nepalensis have perished, and various others are in a sadly drooping condition. The recent thunder-showers have come just in time to save widespread withering and death.—H. H. Crewe, in "Gardeners' Chronicle."

The Californian Dicentras at Home.—I well recollect, says Mr. Drew, in the "California Horticulturist," the first time I found the variety known as D. formosa. At that time I did not know we were so highly favoured as to have any member of the family within our borders. It was in a little Grassy vale. When I saw it, so much did it resemble D. spectabilis, that I thought it was a stray plant of that well-known Chinese variety, the Bleeding Heart of our gardens. On a slight examination, however, I soon saw my error, but so highly pleased was I with it, that I dug it up and removed it to my garden. In California we have three species that I am acquainted with. Dicentra formosa in the Sierra Nevada, at an altitude of 6000 ft. to 8000 ft., is found in Grassy vales near streams of water. It grows from 1 ft to 2 ft. high Dicentra uniflora is found in the northern part of the State, high up on mountain sides It is a dwarf-growing species, never exceeding 6 in. in height. Dicentra chrysantha is the most robust and vigorous of our native varieties, often growing 4 ft. or 5 ft. high. The leaves are often 15 in. long; the flowers average ½ in. to 1 in. in length. The foliage is of the most brilliant yellow colour, and when the sun shines, the leaves sparkle and glisten as though varnished. While it lacks much of the graceful habit of the other varieties, this one surpasses them all in brilliancy. In their natural haunts they grow in a moderate light soil, in the vicinity of running streams. The finest flowers I have always found on plants growing in the shade of trees.

A Tall Foxglove.—In a wood near Milford Haven the other day I saw a Foxglove which measured 11 ft. 8 in. in height, and in full bloom. Is such a case uncommon?—B.

PLATE CXLII.

THE CHRISTMAS ROSES.

(WITH A COLOURED FIGURE OF THE GIANT VARIETY.)

Drawn by Mrs. DUFFIELD.

Few hardy plants possess such pleasant associations as the Christmas Roses. At a season when all kinds of flowers are welcome they produce their handsome blossoms in continuous succession from October to April, and they last a long time in good condition both on the plant and also in a cut state. The common kind (Helleborus niger) has long been a garden favourite, having been in cultivation for nearly three centuries; and it has always been mentioned in glowing terms by early writers on horticulture. Much attention has of late been paid to the introduction of new kinds and to the improvement of the most ornamental of those which we already possess by means of judicious hybridisation and careful selection. This has been chiefly carried out in Continental gardens, from whence many beautiful kinds have recently emanated. There is still, however, ample room for further improvement as regards the types, by skilful cultivation, and also by intercrossing the kinds hitherto not operated upon in that way. Much confusion exists in gardens in respect to the nomenclature of Christmas Roses; indeed, it would be difficult to find two collections in which the names are identical, except in the case of such well marked kinds as the common Hellebore (H. niger) and the fœtid kind (H. fœtidus). With the exception of a Syrian species (H. vesicarius), which is remarkable on account of its large, bladder-like seed vessels, all the known kinds are now in cultivation in this country, but some of these are as yet very rare. The geographical area over which the species are spread is confined to the north temperate regions of the Old World, extending from the extreme western part of Europe to Asia Minor, but the majority are concentrated in the central and south-eastern parts of Europe. Two species—the green Hellebore (H. viridis) and the fœtid (H. fœtidus)—reach as far north as Britain, but they are rather rare native plants. The descriptions of the kinds here enumerated have been made from a careful study of the living plants, and the nomenclature will be found to be in accordance with the views of the most recent botanical authorities.

Group 1.—Leaves not Annually Dying—Flowers Varying from Pure or Greenish-white to a Deep Rose Colour.

Black Hellebore (H. niger).—This well-known kind scarcely needs description, as it may be at once recognised by its pale green, leathery, and quite smooth, leaves which are divided into seven to nine segments 3 in. to 6 in. long and 1 in. to 2 in. broad, coarsely toothed at the margin of the upper half. The leaf-stalks are about one-third longer than the divisions. The blossoms, which are usually borne singly on stems 6 in. long, are about 3 in. across, with roundish divisions varying in colour from a waxy-white to a delicate blush tint, with a fringe of scale-like petals at the inner base of a yellowish-green colour. It is a native of the southern and central parts of Europe. The variety minor is smaller in every part than the type, and is also known under the name of H. angustifolius.

Giant Hellebore (H. altifolius).—This handsome kind, the subject of our plate, though considered by some to be a variety of H. niger, is nevertheless a very distinct kind, and well merits specific rank. It is much larger in all its parts than H. niger. It has leaf-stalks over 1 ft. in length, with the blade large in proportion. The blossoms, which are from 3 in. to 5 in. across, are borne on branching stems bearing from two to seven flowers, and have a stronger tendency to assume a rosy hue than the ordinary kind. Another characteristic is in the leaf and flower-stems being beautifully mottled with purple and green, whilst in H. niger they are of a pale green colour. It also flowers much earlier—in some seasons in the beginning of October. I can find no reliable information as to its original source, but it has been known a long time under the names of H. niger var. major, maximus, giganteus, and grandiflorus.

Oriental Hellebore (H. orientalis).—This is the true Black Hellebore of the ancients, but is of comparatively recent introduction to our gardens, and is yet very rare; therefore is but imperfectly known. It belongs to a set with thick, leathery, dark green leaves, with five to seven divisions, with the two outer divided, each toothed almost to the base. The blossoms vary in colour from green to deep purple, and are produced on forked stems, which rise above the foliage. The Oriental Hellebore is distinguished from the other kinds by the downy under surface of the leaf and the greenish-white blossoms, the roundish divisions of which overlap each other and are tinted at the margin with purple. It is found in parts of Turkey and Asia Minor.

Ancient Hellebore (H. antiquorum) is a kind differing from the above by both surfaces of the leaf being quite smooth and by the greenish-white colour of the flower without the suffusion of purple. It inhabits the Bithynian Mount Olympus.

Olympic Hellebore (H. olympicus).—This kind differs from the preceding in the much thinner texture of the leaves and more finely-toothed margins. The flowers are borne in the same manner, but are smaller and the divisions are not so spreading. The colour varies from pure to greenish-white, and on this account it has obtained several names, such as abchasicus albus, kamtchatkensis albus, &c. It is a very handsome species, and flowers from February to April. As the specific name implies, it is a native of Mount Olympus.

Spotted Hellebore (H. guttatus).—This beautiful kind differs from the last only in the inside of the blossoms being marked with a purple or violet colour. There are several forms of it; in some the markings assume the form of small dots, in others in thin streaks. This is one of the parents of the beautiful hybrids that have lately emanated from Continental gardens, and still more may be done in improving the type by skilful cultivation. The best forms of this kind are, as yet, rare in gardens. It is a native of the Caucasus.

Pallid-flowered Hellebore (H. pallidus).—This differs from the two preceding by the blossoms being of firmer texture and less open, and not of such a pure whiteness as in olympicus. It is a native of the Caucasus.

Flowers Purple.

Colchican Hellebore (H. colchicus).—This is the finest of all the species, and attains a larger size than any other. It may be readily recognised by its thick, dark green leaves, with five to seven broad and coarsely toothed divisions, the veins of which are raised on the under sides and are of a dark purple colour when in a young state. The blossoms are borne on forked stems rising considerably above the foliage, of a very dark purple colour, which contrasts well with the yellow stamens and the striated scale-like petals. Under good cultivation, the leaves attain the length of 1½ ft. and 2 ft., forming fine specimens and producing flowers from the end of January to end of March. It is a native of the north-eastern part of Asia Minor. A fine hybrid has been obtained from it by crossing with H. guttatus, the result being a form with large spreading flowers of a lighter hue than in H. colchicus, and profusely marked with dark carmine streaks. Another hybrid between this and H. altifolius resulted in a form with larger flowers of a lighter purple.

Dark Purple Hellebore (H. atrorubens).—This name should have been applied to the last species, as the flowers of this scarcely merit the appellation of dark red. The leaves are much thinner in texture than H. colchicus, with finer toothing and smaller flowers, with the divisions not overlapping. The colour is dull purple on the outside and greenish-purple within. It is a native of Hungary, and is a common object of culture in gardens, but is often confused with the following kind.

Abchasian Hellebore (H. abchasicus).—This is a more slender and taller plant than the last, but the texture, size, and toothing of the leaves are much the same. The flower-stems are longer, with the space between the fork and the flower much wider. The blossoms are nodding and smaller, and the divisions overlap each other. It is a much superior kind to atrorubens, the colour of the blossoms, with a bunch of yellow stamens and the yellowish-green striated, scale-like petals, rendering them very attractive. It is said that this is also one of the parents of the fine hybrids, by crossing with H. guttatus. It is as yet rather uncommon in gardens, but many other kinds are designated as such. It is a native of the Caucasus, and has been known about ten years.

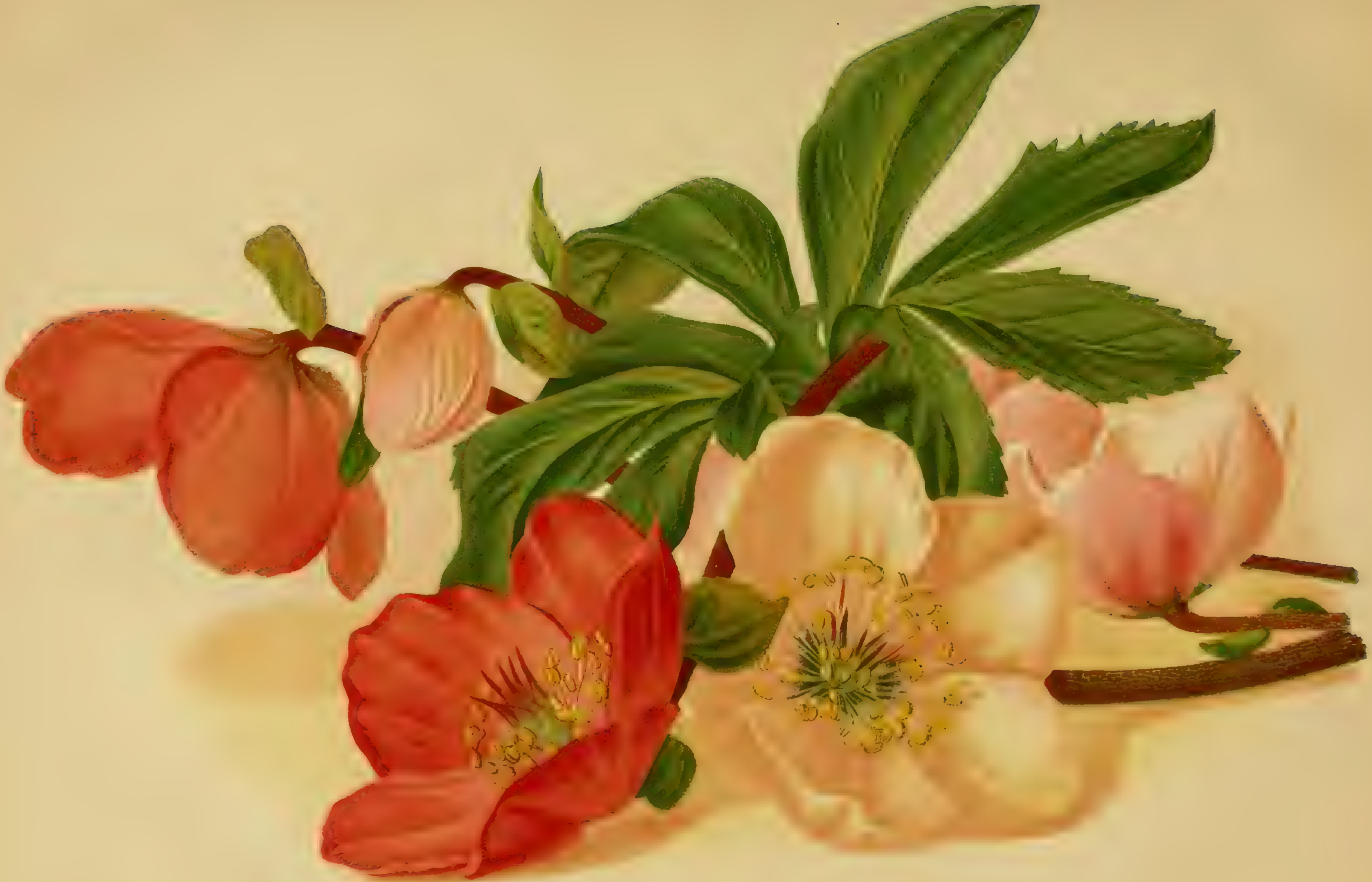
Flowers Green.

Caucasian Hellebore (H. caucasicus).—The leaves of this species are smooth and glossy and with broad divisions, which, combined with the pale green colour of the flowers, render it a very distinct kind. A native of the Caucasus.

Sweet Hellebore (H. odorus).—This differs from the last in the downy under surface of the leaves and slight odour of the bright green flowers. It is found in various parts of Austria.

Group 2.—Leaves Dying Annually—Flowers Green.

Green Hellebore (H. viridis).—This plant, and the others comprising this group, differ in the much thinner texture and narrower



GIANT CHRISTMAS ROSE

divisions of the leaves, and in being deciduous. In H. viridis the number of divisions varies from seven to eleven, and they are sharply irregularly toothed. The flower-stems are about 1 ft. high, with narrowly divided stem leaves, and with from two to seven blossoms about 2 in. across, of a bright green colour. It is found in various parts of Europe, including Britain, where it is a rather rare native plant.

Flax-flowered Hellebore (H. laxus) differs from H. viridis by the greater length between the fork of the flower-stem and the flowers, which is of a paler green, and also by the finer toothing of the leaves. It is found in many parts of Austria.

Thicket Hellebore (H. dumetorum).—A more slender kind than the two preceding, with smaller flowers and narrower and longer stem leaves. Also a native of Austria.

Circular-leaved Hellebore (H. cyclophyllus).—This is very rare in cultivation. It may be distinguished from the others of the group by the downy under surface of the leaves, deeply-forked flower-stem and bright green flowers. The leaflets also assume a circular form; hence its name. It is found at high elevations on some of the mountains of Greece.

Boccon's Hellebore (H. Bocconi).—A very distinct kind readily recognisable by the divisions of the leaves being cleft into three or four lobes. The blossoms are of a pale green colour, borne on forked stems, and from six to eight in number. It inhabits various parts of South-eastern Europe. It is known also under the names of H. angustifolius and multifidus.

Flowers Dull Purple.

Purplish Hellebore (H. purpurascens) much resembles the last form, from which it differs by the fewer and dull purple colour of the flowers. It is a native of Hungary.

Intermediate Hellebore (H. intermedius).—In habit and foliage this kind is nearly allied to H. viridis, but may be known by the smaller and dull purple flowers. It is found in various parts of Turkey.

Rank-smelling Hellebore (H. graveolens).—This also resembles H. viridis, with more blunt leaf divisions, and with flowers of a brown-purple colour on outside. A native of Hungary and other parts of Austria.

Coppery Hellebore (H. cupreus) differs from the last by the coarse toothing of the leaves, very prominent veins, broader divisions, and coppery hue of the blossoms. Also an Austrian species.

Group 3.—With Shrubby, Erect, Perennial Stems and Evergreen Leaves.

Holly-leaved Hellebore (H. lividus).—The specific name of this very distinct kind is so evident a misnomer that either of the names H. argutifolius, ilicifolius, triphyllus, or trifolius, under which it is sometimes known, is far preferable. The H. lividus, described by Aiton in the last century, had livid flowers, but this has no tendency to assume that colour, and probably is another plant retained under the name. It is of erect habit, growing 2 ft. to 3 ft. high. It is the only Hellebore with a thrice divided leaf, and in the type is very sharply toothed, whilst in the variety integrilobus the margins are quite smooth. The rather small pale green flowers are borne in clusters of about twenty from the axils of the upper leaves. It forms very handsome specimens when well grown. A very distinct race of hybrids could, I think, be obtained by crossing this with the red or white-flowering kinds, but, as yet, I have not heard of its being done. It is found on several of the Mediterranean islands.

Fœtid Hellebore (H. fœtidus).—A very distinct native plant with handsome foliage. It grows to a height of 3 ft., with erect stems, on which are crowded its leathery, dull green leaves, with from seven to eleven narrow, toothed divisions. The flowers are borne in drooping clusters, and are small and globose, greenish, tipped with purple. It is widely spread over the western part of Europe.

For further information upon the hybrid Christmas Roses, a detailed description will be found in Vol. VII., p. 463, of The Garden, and various other notes that have appeared at different times.

Culture.

All the kinds will thrive in ordinary garden soil, but for the choicer kinds a prepared soil is preferable, which should consist of equal parts of good fibry loam and well-decomposed manure, half part fibry peat, and half part coarse sand. Thorough drainage should always be given, as stagnant moisture is very injurious to them. A moist and sheltered situation, and where they will obtain partial shade, is best suited to them, such as afforded at the margins of high shrubberies, &c., but care should be taken to keep the roots of the shrubs from exhausting the border in which the Hellebores are planted. In the flowering season a thin mulching of Moss or like material should be placed on the surface of the soil round the plants, as this prevents the blossoms from being bespattered by heavy rains, &c.

Propagation.

This may be done by division or by seeds, which, in favourable seasons, are produced plentifully; as soon as thoroughly ripened they should be sown in pans under glass, as they soon lose their vitality. As soon as the seedlings are large enough they should be pricked off thickly into a shady border, in a light, rich soil; the second year they should be transplanted to their permanent place, and in the third season the majority will produce blossoms. The process of division may be done either in the spring or autumn, the latter being the most preferable. In cutting into pieces the underground stems care should be taken that a leaf and roots are attached to each piece, or but ill success will be the result. The pieces should be potted in sandy soil, and kept in a close but cool frame until they are well rooted, after which they should be planted out.

The common Christmas Rose is perfectly amenable to forcing, for which purpose strong crowns with well-developed buds should be selected and potted in the autumn and gradually inured to a warm temperature.

Many of the kinds here enumerated are not what may be termed garden plants, especially the green-flowered section, but the foliage of some of them is not inelegant, and they are valuable for naturalising in the wild garden. G.

[The specimen from which our plate was prepared was supplied from Mr. Parker's nursery at Tooting.]

St. James's Park.—Somebody with quaint notions of park management sends the following note to the "Times": "The most marked feature is the wholesale destruction of the Grass. Paths, needless and unsightly, are trampled hard all over it. The officials encourage this by putting up iron hurdles along the sides of the paths instead of checking the paths by putting the hurdles across; they wage war, too, on their own account on the Grass, cutting away wide margins by the formed paths, and substituting wastes of yellow gravel; they destroy the beauty and the life of trees by heaping up soil about them, or by leaving them to stand in pools; they let the ground remain strewn with filthy paper, dangerous to riders as it blows about; they spend great sums in artificialising, and fail to preserve the natural beauties, the varying surface, the trees, and the soft green Grass."

International Horticultural Exhibition of 1880.—This will attract the attention of all who are interested in horticulture, and London in that year will be the centre of horticultural energy. As the meeting will probably be held in May, the interval between the present time and the opening amounts to but little more than twenty months—time enough, but none too much to ensure the awakening of all interests whose co-operation is requisite to final success. As regards the general plan, there is as yet no division of opinion, and we not only hope there will not be, but we see not a shadow of a reason why there should be. Horticultural interests are at the present time healthily knit together; the Council of the Royal Horticultural Society is in accord with its constituents; provincial societies are thriving; trade will probably revive now that the Eastern Question is settled; and the horticultural papers appear to be on better terms with each other than they have ever been before. There is, therefore, at present nothing to hinder a general and cordial concurrence of activities in favour of the intended exhibition of 1880. If all those who can pull, however little or however much, will sink small and special considerations, in order to make a pull altogether, we shall come through 1880 with glory, and the world will be enabled to declare that it enjoyed its visit to London to see the great horticultural exhibition. A few things must, however, be done at once. The money box must be sent round. There must be an actual fund provided and a guarantee fund promised. There will need to be developed a considerable amount of organisation, the nest egg for which, fortunately, is in existence. And there are leaders wanted, who at the right moment will no doubt be found. There will be an apparently endless array of details to consider, but the end will come, and a right spirit of work will be wanted, as well as a certain degree of activity. The Council of the Royal Horticultural Society will probably set the ball rolling and then leave the government of the whole affair to a special committee. In the formation of that committee lies for the present the vital germs of the whole affair. It must be characterised by breadth. If any particular party or interest has undue prominence in it, a blight will spread over the whole affair and mar its completeness, to the discredit of the self-seeking. We do not fear any such catastrophe, but, on the other hand, hope for the best every way.—"Gardeners' Magazine."

GARDENING FOR THE WEEK.

Indoor Plant Department.

Shifting Spring-potted Roses.—Roses, either struck from cuttings last year and transferred in the spring from small pots into others somewhat larger, or that were taken up from the open ground and moved into pots with a view to their being forced the ensuing winter and spring, will, in some cases, have made more growth than might have been anticipated, completely filling the soil with roots. Roses, more than most plants, should not be over potted, but, where in the condition above described, although somewhat late in the season, I should recommend their receiving a moderate shift, for though they may not be expected to make much more top-growth after this time, still, if the means have been taken as recommended through the season to keep the foliage free from insects and mildew, it will yet remain for a long time fresh and healthy on the plants, in which case such as are newly shifted will keep on rooting freely until late in the autumn, and will thus accumulate strength, which will enable them to bear forcing and to flower much stronger than they would by potting immediately before forcing was commenced, for it should ever be borne in mind that with Roses more than most plants, the flower they are able to produce in any given season is much more consequent on the strength stored up in the plant than anything resulting from the most liberal treatment immediately preceding their blooming.

Potting Roses Struck in the Open Ground.—Roses intended for pot culture struck from cuttings inserted last autumn in the open ground with merely the protection of hand-lights or frames through the winter, these being removed when growth fairly commenced, may, although full of green foliage and yet making growth, still be potted if this has not been done, and if the operation be carefully performed, they will make roots and get established before winter in a way that will enable their making more progress next summer than if the potting were deferred until late in the autumn or till spring. This is particularly the case with the Tea varieties, which, except in the most favoured localities, if left out will require protection of some sort through the winter. The pots used should not be larger than necessary, and the plants ought to be taken up very carefully so as to break the roots as little as possible. There will not be much difficulty experienced in this if the soil in which the cuttings were put had a moderate amount of sand mixed with it, such as usual. Pot firmly, water moderately at the time of potting, and stand them in a pit or deep frame on a moist bottom, keep close with only a little air admitted for a couple of weeks, giving a slight shade when the sun is powerful, damping them overhead with the syringe once a day when the weather is warm, gradually giving more air until they will bear full exposure. By this method I have had much better and stronger plants at the twelve months' end from the time the cuttings were put in than when confined the whole of the time to pots, unless where they have been pushed on under glass during the spring and summer.

Pot Roses Intended for Blooming at Christmas.—Keep a vigilant eye upon the plants that are intended to flower under glass towards the end of the year from buds formed in the open air previous to their being moved inside. Every means should be taken to promote growth by keeping the whole of the foliage healthy and clear from mildew, aphides, and red spider, by an adequate supply of water whilst the weather keeps hot, and the removal of any flower-buds now being formed, which, if retained, would open before the time required. The plants should by no means at any season be allowed to stand too closely together, but, from this time forward, through the autumn, the effects of crowding would be worse than earlier. These Roses, as a matter of course, are not intended to be forced, but simply to open their flowers in an ordinary greenhouse temperature, and for this purpose will principally consist of the Tea varieties.

Roses for the Earliest Forcing.—Such Roses as are intended for forcing, to give a succession after the last-named plants have done flowering, should also consist to a considerable extent of Tea kinds or Hybrid Perpetuals; these must now be well attended to by still keeping the foliage quite clean and giving enough water in dry weather to prevent any approach to flagging. No further liquid stimulants are necessary for them, as the principal object now should not be to excite further growth, but to get that which is already made fully matured. They should have a perfectly open situation, not stood, as these plants are often seen, under the shade of walls or trees, suffering from neglect in a way that precludes the possibility of their answering to the trying process to which they, in common with all hardy plants, are subjected in forcing.

Rose Cuttings.—The batch of these advised to be put in a few weeks back in pots, and confined in a close, cold frame until they have callused, will by this time have arrived at a condition that will permit of their being subjected to gentle bottom-heat, which they should at once receive, paying them every attention, so as to induce the formation of roots and get them fairly established whilst there is solar warmth and length of day to admit of this, for unless they make sufficient progress at the roots, with some shoot growth, they are in a worse position to stand through the winter than cuttings that are put in late and not expected to root until warmth is applied to them late in the winter.

Budded Roses.—Those that were budded the first should now be looked over and the ties slackened, otherwise, through the thickening of the shoots, the bark will be all but cut through so far that the shoots are liable to be broken off by the wind, in which case the labour bestowed will be lost, as well as the season's growth. Where the buds inserted have started into growth the shoots beyond the junction may be considerably shortened so as to direct the current of growth to the development of the bud-shoot, yet too much of the stock shoots should not be cut away, or the operation will have a corresponding influence in checking the roots, a circumstance that by no means should occur.

Removal of Suckers.—One of the worst evils connected with standard and half-standard Roses, especially when budded on the Brier stock, is their disposition to produce root-suckers. In the spring, when the Roses are receiving the most attention, these are usually removed, but now, when the principal blooming time is over, vigilance in their removal is frequently relaxed, and they are little interfered with, yet it is quite as necessary to take them off now as it is earlier in the season, otherwise they will seriously interfere with the strength and substance which the present season's growth should attain.

Indoor Climbing Roses.—Strong-growing varieties, such as Maréchal Niel, Lamarque, and others of similar habit, that, after blooming had a considerable portion of their old wood cut away, with a view to the production of strong shoots intended to flower next year, should have the growth of these encouraged by all available means, for upon the development and strength of these in a great measure will depend their next year's flowering abilities. Such shoots as above referred to will yet make a good deal of progress, to assist which, if the soil in which the roots are placed be at all poor or limited in amount, it should be frequently supplied with liquid stimulants and the foliage kept quite free from their two great enemies, insects and mildew, without which it is useless to expect the formation of growth of a character able to bear a full complement of fine flowers. It is at this season of the year, when there are so many other subjects requiring attention, that indoor climbing Roses are liable to get neglected in this particular matter, and to it may be attributed the fact that when grown on the rafters or roofs of ordinary plant houses they are so frequently worse managed than any of the other occupants.

Soot Water for Pot Roses.—It may be well to again allude to the necessity for the frequent use of this. Worms have a particular liking for the soil in pots where rich manures are used; on this account there are no plants grown that suffer more from their attacks than Roses. The fact of their bearing strong stimulants admits of the soot water being applied somewhat stronger than would be safe to use for many plants. Before giving it it is well to let the plants get as dry as can be safely done without the foliage being injured; then give a thorough soaking, the effect of which is that generally in a few minutes the worms, especially the large red ones, make their appearance above the surface, when they can be removed.—T. Baines.

Stoves.—Such free-flowering plants as Bougainvillea glabra, Allamandas, and plants of that class having only a limited feeding ground through being grown in pots or planted in confined spaces, should now be liberally supplied with manure water in order to enable them to continue blooming late in the autumn, a time when they will be of much more value than they are now. With such vigorous-growing plants as the above there need be no fear of exhaustion from keeping them in a flowering state too long, as with plenty of stimulating matter applied to the roots they may be had in bloom at least six months out of the twelve, and will start away again in the spring as freely as ever. A top-dressing of thoroughly decomposed manure, such as has been in use for mulching Vine borders, may with advantage be laid over the soil so as to encourage surface roots and obviate the necessity of having to water the plants so frequently.

Gardenias.—Young growing plants of these should now have a final shift so as to get them thoroughly established and the pots well filled with roots before autumn sets in. Nothing suits these so well as good, rough, fibry peat, with just sufficient sand in it to keep it open and porous in order that water, of which they like large quantities when growing, may pass freely through it. A pit or frame where they can be plunged in a bed of gently fermenting leaves or tan is the best place in which to grow them, as there they can be heavily syringed and shut up close early in the afternoon, a course of treatment that expedites growth and helps to keep them free from mealy bug, a pest to which they are unfortunately rather subject. Where any are infested with this troublesome pest the only remedy just now is hand cleaning, as it will not be safe, owing to the soft state of both leaves and the tips of the shoots, to use any of the insecticides sufficiently strong to destroy them. Keep the plants well up to the light, in order that the growth they make may be firm and mature, without which they do not flower at all freely.

Greenhouses.—When dry, parching winds prevail accompanied by brilliant sunshine. It is a matter of some difficulty to keep up anything like the necessary amount of atmospheric moisture to maintain the various kinds of plants in a healthy, growing state. While such weather continues every effort must be made to counteract its effects as far as possible by well wetting the under part of the stages among the pots, and indeed every part of the house where water can be used without being objectionable. Much watchfulness will likewise be requisite to see that hard-wooded plants do not become dry at the roots, to prevent which they should now be looked over both morning and evening. Azaleas, especially, will require much attention in this respect, as they now take up great quantities of water, and any deficiency as regards moisture is sure to show itself in the small size and paucity of the flowers when the season arrives for them to be produced. Where any are found to have thrips on their leaves, means should at once be taken to destroy them, or they will soon initiate themselves into the points of the shoots, and cause irreparable injury to the buds now forming. Although only a few of these pests may be observable now, they increase at such a rapid rate if left to themselves, as to soon spread over a whole household of plants. The stock of autumn and winter-flowering plants will require unremitting attention. Rhodanthe Manglesi is one of the most charming and useful plants it is possible to have for early spring blooming, seed for which for them to bloom at that time should be got in at once. Their lovely pink, satin-like flowers are always greatly admired, but they never show to so much advantage or get so fully appreciated as when cultivated in pots. The seed should be sown in a pan of light rich soil, which should then be kept close under glass till they germinate. As soon as large enough to handle, prick out into 3-in. pots, placing five or six plants in each equidistant apart, after which stand them in a frame, and keep them close and shaded for a few days to give them a start. Damp is their great enemy during the winter months, and to guard against this they must be carefully supplied with water so as not to wet them overhead or keep them too moist at the root. A shelf near the glass, where they can have a free circulation of air, is the best place to winter them, and at the turn of the year they should be gradually shifted on into larger pots, as they require more root-room. After that time they must have a moist, growing temperature, such as an intermediate house affords, and be grown on from then without check till they attain the desired size. The tendency of Rhodanthes to produce bloom is so great that, unless they are liberally treated and pushed on by giving them every encouragement, both as regards rich soil and a moist, warm atmosphere before the sun bears much power, it is almost impossible to get them of sufficient size to be really effective. In shifting them on they should therefore have a small portion of thoroughly rotten manure mixed with the leaf-mould and loam in which they are potted, the latter of which should be in about equal proportions. By affording them a rich, stimulating soil of this kind, and giving them plenty of manure water, 6-in. pots will be quite large enough to grow them in, a size that looks more suited to the habit of the plant than others of greater dimensions. Among fine-foliaged plants available for greenhouse or conservatory decoration Marantas should have a foremost place assigned them, as few plants are more highly prized or produce a better effect than these. They dislike sunshine or dry air, and, therefore, in arranging they should have the most favourable position that can be selected for them. Soft-wooded flowering plants, such as Balsams, Begonias, Petunias, Achimenes, Pelargoniums, &c., must not be allowed to suffer from lack of water, or they soon shed their bloom and present a shabby appearance. The single zonal Pelargoniums will be found to seed rather freely, and, in order to prolong their flowering to the utmost, the whole of it should be picked off as soon as the petals fall, as seed-bearing is a great tax on the plants.

Solanums.—Plants of S. Capsicastrum and S. Pseudo-Capsicum should now receive sufficient water at the roots, or the berries will not swell freely. Look over them closely from time to time in order to see that the leaves do not get affected with red spider, or this pest will quickly turn them quite yellow, after which they have an uninviting appearance. Where they are grown through the summer in pots they need much attention in this way to keep up the deep green colour of their foliage, which will be greatly benefited by the use of manure water once or twice a week.

Salvias and Veronicas for flowering later in the season, and now set out-of-doors, will by this time have filled their pots with roots, and will require diligent attention in the way of watering. Give them weak liquid stimulants twice a week; this is the more necessary if the pots which they occupy be small compared with the size of the plants. All such plants are better for being plunged through the summer, for in this way they do not need so much care in watering, nor are they so liable to suffer if unobservably the soil get a little dry. In all cases, however, where plants are plunged it is essential that the material in which they are thus placed should be such as will not harbour worms, or they will get in amongst the roots, especially when manure water is used, for which they appear to have a particular liking, and even to strong-habited subjects like the above they soon do serious injury.

Cyclamens that have been somewhat at rest during the summer, and which have now commenced growing, should be repotted, removing all the old soil and replacing it with new material. Some prefer a peaty soil, others loam and leaf-mould, with some manure added in all cases, using sand enough to keep it sufficiently open; pot moderately firm, and do not give them too much room (an 8-in. pot will be found of sufficient size for a very large root). After potting, put them in a frame or pit, and keep them a little close, sprinkling them overhead in the afternoons of warm days. These plants, although generally looked upon as succeeding with ordinary greenhouse temperature, are better for being kept a few degrees warmer than is usual for many greenhouse subjects. Keep a constant eye upon them, in order to see that they do not become affected with green fly, to which they are very liable; it gets unobserved on the under sides of the leaves, and frequently before it is noticed so injures them as to do serious mischief to the plants, especially whilst the leaves are young. Fumigating or dipping will rid them of this insect.

Chrysanthemums.—No plants are more useful or more easily grown than Chrysanthemums, and that are oftener seen below mediocrity than otherwise, and this generally through an insufficiency of water in some stage of their growth. After the roots have got fairly hold of the soil in their blooming pots, they should receive strong manure water every other time they are watered. They will bear it as strong as any plant in cultivation. The Mushroom-shaped style of training is the most in favour with those who grow them for exhibition, but it is unnatural and useless for general decorative purposes. Plants of the larger varieties, confined to from two to five shoots each, neatly tied to a stick, the head of the plant brought out to about twice or thrice the diameter of the pots they occupy, will be found the most useful, and this will give them ample room for the development of their foliage, which, if they are well grown, will be of the darkest green. As the shoots of the large kinds branch out in growth, they should be thinned to the number of flowers the plants are intended to carry, leaving one flower to each shoot. The plants will carry from six to eighteen, according to their strength. To those who have not tried this thinning process, it may appear a great sacrifice in quantity; but either for cutting or for decoration on the plant, one good flower is worth three inferior ones, and flowers so treated will last fresh on the plant fully a third longer than others that have been insufficiently thinned. The Pompones also require thinning, but not so much as the large varieties, neither in the reduction of the number of shoots nor to the number of flowers each shoot will carry; these may be left from three to half-a-dozen to each terminal shoot.

Striking Cuttings.—Many find considerable difficulty in striking tricolor Pelargoniums. The want of success with these, as compared with other kinds, is attributable to the cuttings not being put in at the most suitable time and managed in the way best calculated to insure their rooting. There is no way in which they do better than when put in about the middle of the present month. Inserting half-a-dozen cuttings, each in 6-in. pots, placed in the open air right in the full sun, drain the pots in the usual manner, and fill them up with ordinary loam sifted, to which add one-half sand; take the cuttings off and prepare them for putting in by removing the bottom leaves, leaving three or four at the top, according to the size of the cutting, remembering that the larger the cutting, provided it be not too rank in growth and soft, the better plant it will generally make in a limited time. Before putting them in allow them to lie on the potting bench for a day, as is usual with the ordinary varieties, so as to allow the base to dry up a little. When they are inserted press the soil tightly to them and give a sprinkling of water. The principal advantage in striking these variegated kinds of Pelargoniums out-of-doors at this season is that they will bear a good deal more water without danger of rotting than can be given to them at a time of the year which necessitates their being struck in pits or frames either with or without artificial heat; the great point gained is that they do not lose so many leaves, that they root quickly, and that they make strong plants before autumn, much better calculated to stand the winter than would otherwise be the case. The earlier in the summer suitable cuttings can be got the better they will succeed managed in this way. A dozen plants rooted thus early and kept on growing slowly through the winter will, at bedding-out time, fill as much space as double the number of late-struck small plants. The fine old Lobelias of the cardinalis section are not now nearly so much grown as they deserve to be. If these and some other similar-habited subjects were used in sufficient number amongst bedding plants of more procumbent habit, much of the objectionable formality of the latter would be avoided. They are easily grown, easily wintered, and more effective in appearance. There are now a number of fine hybrids varying much in the shade of their flowers, and also in their size and substance. It is well for those who purchase new expensive varieties of Dahlias to strike a few cuttings of each at this time, as it sometimes happens that the old roots perish in the winter, in which case cuttings struck now will supply their place, and will often produce cuttings in spring more freely than the larger roots. They should be taken off at a joint similarly to the spring cuttings, inserting them singly in 3-in. pots with a little drainage in the bottom, and filling with fine sandy soil, with a little sand on the surface. Keep them under bell-glasses or in the garden frame, shaded from the sun, and sufficiently moist to prevent their flagging. In this way they will root through the pots and not require more room, as they will get sustenance from the roots that thus get into the soil through the little pots, the latter getting quite filled with the tubers. When the tops are ready for removal in the autumn, the pots with the roots in them will merely need putting in a dry place out of the reach of frost.

Indoor Fruit Department.

Melons.—As soon as there is any appearance of cold weather, some fermenting material should be put round the beds. If there be a scarcity of hot stable manure, any kind of vegetable haulm, mixed with Grass mowings, may be used. Keep the shoots well thinned out, overcrowding being one of the greatest mistakes that can be committed in Melon culture, and at no season are its consequences so injurious as in the autumn, when the sun's power is declining. Raise the fruit well up on inverted flower-pots as it begins to ripen, in order that it may be fully exposed to the sun. As it approaches maturity discontinue syringing, and be careful not to give the soil too much water. It is necessary at this time of the year to use less than earlier in the summer, or it will interfere with the flavour, and be liable to cause the fruit to crack.

Cucumbers in frames should, as recommended earlier, be stopped at every joint where they show fruit, a practice which tends to prevent their getting so much crowded with superabundant shoots, as they otherwise would be; but even under this treament they will get too full of growth unless the knife is freely used from time to time in removing all that is not required. Where Cucumbers are wanted as late in the season as they can be had, and where there are no means of growing them, except in ordinary garden frames, they should be assisted with manure water regularly after they have been some time in bearing, and, above all, continually syringed, getting to every part of the leaf-surface, so as to keep them free from insects, without which all other attention will be unavailing. Where there are houses or pits in which to grow Melons and Cucumbers, the above directions are equally applicable.

Tomatoes.—Towards the middle of the month these will be at their best, as regards quantity of fruit, but it will be towards the end of the month before the ripe fruit can be seen to advantage. As soon as any of the fruits begin to colour, prune in the leaves and laterals pretty closely, so as to freely expose the fruits to bright sunshine. Some growers prefer allowing them to colour and to fully ripen on the plants; others, on the other hand, gather them immediately they begin to colour and place them on a layer of straw near the glass under sashes in frames. Under such conditions they ripen pretty well, and by removing them early from the plants, the remaining fruits have a better chance to swell and ripen.

Hardy Fruit.

Newly-planted Strawberries must be attended to with water, if the weather be dry, or they will suffer to an extent that will greatly interfere with their bearing capabilities the ensuing season. The same applies to Strawberries in pots. Those who cultivate Strawberries in pots may rest assured that a good deal of their success depends on the plants being plentifully supplied with water so long as they are making any growth. Place them in the full sun on slates or boards in a square as close as the pots will stand. By this means they will protect each other from the full force of the sun, which, coming in contact with their sides while at all powerful, is injurious to the roots of any plant grown in pots.

Kitchen Garden.

Celery.—The particular time at which Celery is wanted for use, in the autumn, should regulate the period at which it should be earthed up, for it is not advisable to do this fully thus early in the season, unless it is required for use as soon as blanched, for, when the earthing-up process is completed, it does not afterwards keep so well. There are many who do not value this vegetable whilst summer Lettuces can be had, consequently, where this is the case, it is better not to draw more earth to the rows than is necessary to keep the leaves in an upright position and prevent them from being broken down by the wind. Crops intended for use as soon as they are large enough for the purposes for which they are required should be gone over at once; a few of the small outside leaves and all suckers should be removed, and the whole of the remaining leaves should then be brought together in the hand and tied loosely with a ligature of bast high up the stalks; in fact, just beneath the leaves. If the tie is not slack it does not allow the centre leaves, that are now pushing up, room to grow, in which case they become deformed and spoilt. Hand-pick all weeds that are growing in the trench, give a good soaking with manure water, and then apply 6 in. of fine soil to it; draw the stalks tightly together with one hand, whilst with the other the earth is placed close up to the plants. If this is not done the soil gets into the hearts, causing decay. In the course of a fortnight add another 6 in., carrying on the work as above described, and, after the lapse of a similar period, finish off with 6 in. more, leaving the sides of the ridge sloping and smoothed with the back of the spade so as to throw off wet. It is not good practice, except in the case of the general winter crop, to finish the earthing up of more Celery than will serve for a month or so, for if much is earthed up early in the autumn in a dry season it suffers from want of water, for, as will be easily understood, when the soiling up is complete little can reach the roots. Always allow the leaves of Celery to get quite dry before earthing up, or it is liable to rot. In carrying out the work care should be taken that the roots are not interfered with. This will not occur if, at the time of planting, sufficient room was left between the rows. The use of paper tied loosely round the plants before they are earthed up, with a view to keeping the earth out of the hearts, is advocated by some, but, even when quite thin and good in quality, it always gives a disagreeable taste to the stalks.

Vegetable Marrows.—This crop is now at its best, and some of the most vigorous shoots will require attention as regards pegging down, or placing bits of bricks or stones on them to keep them down and cause them to root. In dry weather water them abundantly, so as to keep them in vigorous health and to prevent the attacks of mildew. Do not allow the fruit to become too old before it is gathered.

Extracts from my Diary.

August 26.—Sowing Black-seeded Brown Cos, Stanstead Park, and All the Year Round Lettuces; Fraser's Broad-leaved and Green-curled Endive. Manuring and digging borders for Endive and Lettuce. Earthing up Celery and Cardoons when the soil is dry and in suitable condition. Gathering ripe Peaches, Nectarines, Pears, Figs, and Plums, and putting them away in a dry, cool place to keep as long as possible. Watering Pines, newly-planted Strawberries, Endive, and Lettuce.

Aug. 27.—Sowing Intermediate Stocks and Red and White Turnip Radishes. Potting off Mrs. Pollock and other tricolor Pelargoniums. Staking Laxton's Unique Peas. Thinning Spinach. Clearing out a pit ready for Cucumbers. Looking over Cucumbers and Melons, stopping their shoots, and removing dead leaves, &c. Watering Vine borders, Peach trees, Scarlet Runner Beans, and Carrots.

Aug. 28.—Sowing Sweet Basil for winter use and Mustard and Cress in succession. Putting in Cuttings of Viola Blue Perfection and Golden Gem under handlights against a north wall. Planting a small breadth of Leeks for spring use. Thinning out Vegetable Marrows and closely stopping their shoots. Filling in all Cauliflower drills, giving them a good earthing. Forking over the ground between Cabbage plants. Gathering Green Gage Plums and Morello Cherries for preserving. Watering late-sown Peas, Dwarf Beans, Celery, Endive, and Lettuce.

Aug. 29.—Sowing Turnips. Putting in cuttings of Heliotropes, Cupheas, and Ageratums. Transplanting Wallflowers, Antirrhinums, and Cauliflowers. Giving all Peach and Nectarine trees a good syringing where the fruit is gathered. Gathering Tomatoes and Devonshire Quarrenden Apples. Spawning a new Mushroom bed and preparing more manure for another. Digging up ground previously occupied by Peas for planting with Coleworts. Giving Peach trees from which the fruit has been gathered a good soaking with water at the roots.

Aug. 30.—Potting off Fuchsias, Verbenas, and Cucumber plants. Putting in cuttings of Salvia splendens and Lobelia pumila. Cutting back and nailing Roses on walls. Clearing off Peas and heavily manuring the ground, afterwards digging it up roughly to remain through the winter. Gathering Victoria Plums and Noblesse Peaches for preserving. Thinning Turnips, Spinach, and Lettuce. Watering Pines, late-planted Strawberries, Cauliflowers, and Carrots.

Aug. 31.—Potting seedling Cyclamens. Planting Endive and Lettuces under the walls. Weeding Strawberries and cutting off the runners which were laid in pots. Emptying and refilling Grape bottles with spring water with a little charcoal added. Cutting and stacking away turf. Gathering Lord Suffield Apples and Jargonelle Pears. Watering Cauliflowers, late-planted Celery, Lettuces, and Endive. Fruit in use for dessert: Pines, Grapes, Peaches, Nectarines, Pears, Figs, and Plums.—W. G. P., *Dorset.*

GARDEN BOTANY.

(Continued from p. 161.)

Number of Cells in the Ovary.—The number of cells in an apocarpous ovary is never more than one originally, though, as in the large genus Astragalus (Leguminosæ), the ripe seed-pod is more or less completely two-celled by the ingrowth of the dorsal or lower suture. The sutures are the longitudinal lines on the pod corresponding to the midrib and confluent margins of the carpellary leaf. On the other hand, syncarpous ovaries vary from one to many-celled. As already observed, the number of carpels is sometimes inferred from the number of branches or lobes of the styles. It is open to doubt, however, whether this is an infallible test, because there seems to be no valid reason why the style of a single carpel should not be branched. But, accepting this test, the whole of the ten thousand, or thereabouts, species of the Compositæ have a one-celled ovary composed of two carpels. In the Thrift family the ovary is one-celled with five distinct styles. The Cruciferæ have a two-celled ovary, resulting from the development of a partition (septum) from the cellular tissue of the opposite placentas (see next paragraph); but this is, nevertheless, a syncarpous pistil. Many dicotyledonous families are characterised by having a two-celled ovary; thus, Umbelliferæ (Parsley), Boragineæ (Myosotis), Solanaceæ (Nicotiana), Scrophulariaceæ (Antirrhinum), and Labiatæ (Salvia). The last-named family and the Boragineæ have almost perfectly four-celled seed-vessels, from the growing inwards of the dorsal suture finally forming four one-seeded nuts, which fall away separately. Nearly all monocotyledonous plants (Lilies, Irises, &c.) have a three-celled ovary; Orchids, however, have only a one-celled ovary. Among dicotyledons a three-celled ovary is common in the Euphorbiaceæ and Malpighiaceæ. A four-celled ovary is characteristic of Heaths and the Onagrarieæ (Fuchsia and Epilobium); and Pelargonium, Linum, Apple, and numerous other genera have five cells in the ovary, but no family of any extent is characterised by having this number, though five obtains for sepals, petals, and

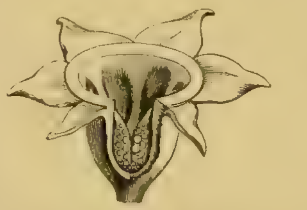


Fig. 469*a*. — Ovary, which is four-celled at the base and one-celled at the top.

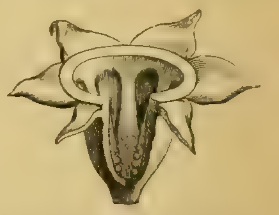


Fig. 469*b*. — Ovary, which is five-celled at the base and only one-celled in the upper part.

stamens. In Linum the seed-vessel becomes ten-celled by the infolding of the back of the carpels. When the number of cells exceeds six the ovary is commonly described as many-celled, as the actual number is often inconstant in the same species. Thus, in the Mallow there are ten or twelve, or more. It may be mentioned here that there is no hard and fast line between apocarpous and syncarpous pistils. The ovary of Mallow, for instance, is syncarpous, but when the seed-vessel is ripe the carpels separate from each other and the axis and fall away separately. Something of the same sort occurs in Pelargonium and Geranium. With a few exceptions, the cells of an ovary are on the same level, not one above the other. The ovary of the Pomegranate is one of the most noteworthy exceptions; here there are two whorls of cells one above the other. An occasional, though rare, occurrence is the separation of the ovary into cells in the upper or lower part, but not throughout (see fig. 469, *a*, *b*, and *c*).

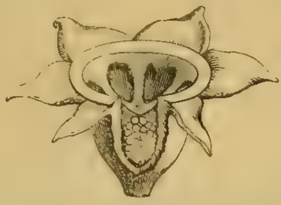


Fig. 469c.—Ovary, which is one-celled in the upper part and four-celled at the base, the walls sloping downwards from the circumference to the centre.

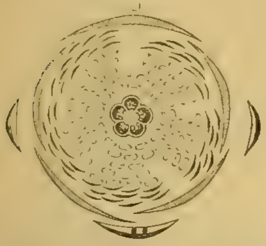


Fig. 470.—Diagram of the flower of Mesembryanthemum violaceum, the cells of the ovary superposed to the sepals.

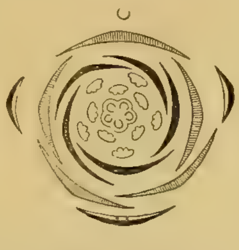


Fig. 471.—Diagram of the flower of Geranium Robertianum; cells of the ovary alternate with the sepals.

Position of the Cells of the Ovary in Relation to the Parts of the Floral Envelopes.—When the number of the cells of the ovary is the same as the parts of the calyx, they are sometimes superposed to them, as in Mesembryanthemum (fig. 470), but much oftener alternate with the sepals (fig. 471). On the other hand, in nearly all monocotyledons they are superposed to the outer divisions of the perianth (fig. 472). In the dicotyledonous Cneorum (fig. 473) they are superposed to the petals, answering to the inner divisions of the perianth of Lilies. When the number of cells of the ovary is much larger than the number of sepals, as in Kitaibelia (fig. 474) and Malope (fig. 475), they are in clusters superposed to the petals. In the two-celled ovaries of Solanaceæ, &c. (figs. 476 and 477), one of the cells is anterior and the other posterior, whilst in the three-celled ovary of Malpighia urens (fig. 478) the cells are superposed to three of the sepals. On the contrary, the three cells of the ovary of the Horse Chestnut are superposed to three of the petals, and consequently alternate with the sepals. Hitherto little use has been made in classification of the position of the parts of a flower with regard to each other and the mother axis, but the importance of the characters afforded by the plan of the flower is beginning to be recognised.

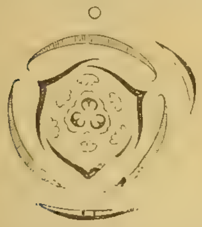


Fig. 472.—Diagram of a Lily flower; the cells of the ovary superposed to the outer divisions of the perianth.

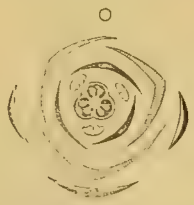


Fig. 473.—Diagram of the flower of Cneorum tricoccum; the cells of the ovary superposed to the petals.

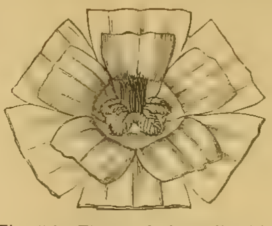


Fig. 474.—Flower of Kitaibelia vitifolia, showing the relative position of the carpels and other parts.

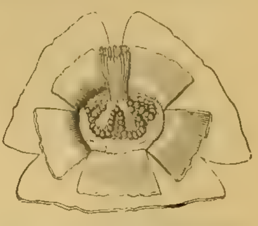


Fig. 475.—Flower of Malope trifida, showing the position of the carpels in relation to the other parts of the flower.

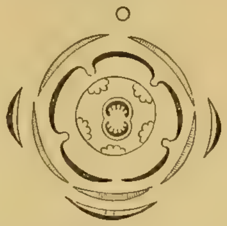


Fig. 476.—Diagram of the floral structure of Lobelia urens; ovary two-celled, the cells anterior and posterior.

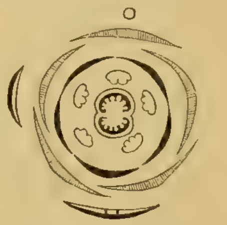


Fig. 477.—Diagram of the floral structure of Solanum dulcamara; ovary two celled, the cells anterior and posterior.

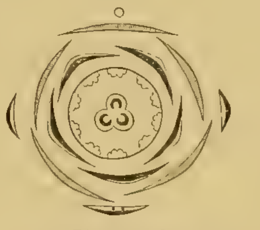


Fig. 478.—Diagram of the floral structure of Malpighia urens; ovary three-celled, cells superposed to three of the sepals.

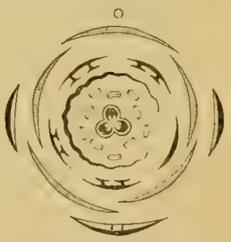


Fig. 479.—Diagram of the flora structure of Stadtmannia australis; ovary three-celled, cells superposed to three of the sepals.

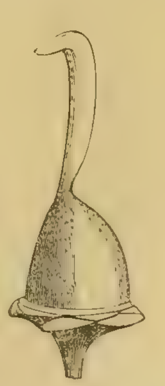


Fig. 480.—Pistil of Violet.

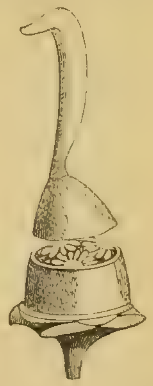


Fig. 481.—Pistil of Violet cut transversely through the ovary, showing the three parietal placentas.

The Placenta.—The part of the ovary to which the ovules are attached and through which they are nourished is termed the placenta, whether there is any special thickening or conformation or not. There are two principal types of placentation—parietal and axile.

Parietal placentation is confined to the ovaries of some apocarpous pistils, and some of the syncarpous pistils with only one cell, or, in other words, parietal placentation, only occurs in one-celled ovaries, but not all one-celled ovaries have this kind of placentation. Sometimes, however, the parietal placentas ultimately meet in the centre of the ovary, which is thus more than one-celled. In this kind of placentation the ovules are attached to the outside walls of the ovary, or to the partial partitions proceeding therefrom. The ovary of a Violet (fig. 481) has three longitudinal parietal placentas, and when the seed-vessel is ripe it splits open in three valves with a row of seeds down the centre of each valve. The inferior ovary of the Cucumber and Melon has three parietal placentas, though it is only in quite a young state that this can be observed; subsequently the intervening space is filled with pulp, and in the mature fruit the placentas appear to proceed from a central axis. In the superior ovary of Nemophila (fig. 482), and also of Eutoca (fig. 483), there are two parietal placentas. Here the placenta itself is a distinct outgrowth, as in the Cucumber, in both cases nearly meeting in the centre of the ovary. The inferior ovary of the Gooseberry has two parietal placentas, and the seeds are suspended on long stalks in the pulp of the ripe fruit. In the Poppy (fig. 484) the placentas are numerous, and consist of thin plates extending almost to the centre of the ovary, and bearing ovules on both sides. The placentation of the Cruciferæ (fig. 485) is also parietal; but, as already explained, the ovary becomes two-celled by an outgrowth of the opposite placentas. This partition is called a spurious septum or dissepiment. It is usually thin and transparent, persistent with the framework, if we may so call it, of the fruit after the valves and seeds have fallen away. It is very conspicuous in the oval or oblong seed-vessels of Honesty (Lunaria biennis). All the foregoing modifications of parietal placentation belong to syncarpous ovaries, but there is much the same range of variation in the ovaries of apocarpous pistils. In Astrocarpus, a member of the Mignonette family, the apocarpous pistil consists of several carpels, each bearing a single ovule on its outer or dorsal wall (fig. 487). Mignonette itself, we may mention, has a syncarpous pistil with three parietal placentas. The pistil of Christmas Rose (Helleborus—fig. 488) is made up of several carpels, each bearing a double row of ovules down the inner or ventral side. This is sometimes distinguished as marginal or sutural placentation; it is common in the Leguminosæ.

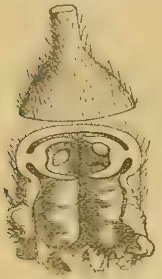


Fig. 482.—Ovary of Nemophila phacelioides, torn open to show the two half-circular parietal placentas, which nearly meet at the sides.

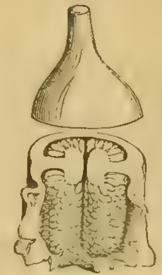


Fig. 483.—Ovary of Eutoca viscida, cut transversely and torn open on one side to show the two parietal placentas, which almost extend to the centre.

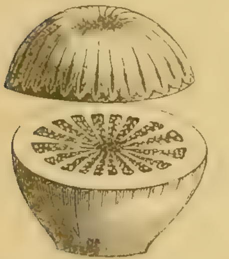


Fig. 484.—Ovary of Poppy, cut across, to show the numerous placental plates, which nearly meet in the centre.

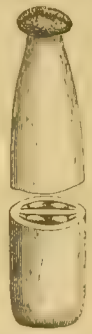


Fig. 485.—Ovary of Stock, showing the ovules attached to the outer walls, and the ovary divided by a spurious septum.

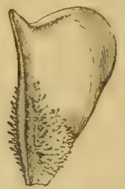


Fig. 486.—One of the carpels of a pistil of Astrocarpus sesamoides.

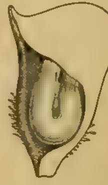


Fig. 487.—One of the carpels of Astrocarpus, torn open to show the solitary seed inserted on the dorsal wall.

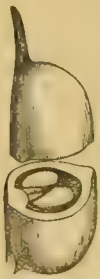


Fig. 488.—Section of a carpel of Helleborus, showing the attachment of the ovules down the inner or ventral side.

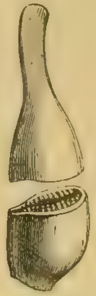


Fig. 489. — A carpel of Butomus, cut transversely to show the placentation of the ovules all over the surface.

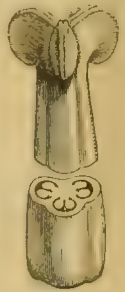


Fig. 490.—Transverse section of the ovary of a Tulip, showing the axile placentation of the ovules.

Finally, the ovules are spread all over the interior of the ovaries in the Flowering Rush (Butomus umbellatus—fig. 489); that is to say, the placenta is of the same extent as the cell wall. This condition, as well as that described for the Poppy, is exceedingly rare; in fact, quite exceptional.

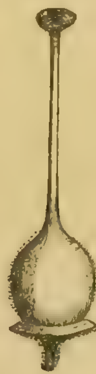


Fig. 491.—Pistil of Chinese Primrose.

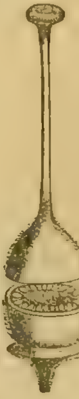


Fig. 492.—Pistil of Chinese Primrose, cut transversely through the ovary to show the central placenta.

Axile Placentation.—As the term implies, the placentation is termed axile when the ovules are attached to the centre of the floral axis or the inner angles of the cells of the ovary, as in the Tulip (fig. 490). This kind of placentation is found both in inferior and superior ovaries. When the ovary is one-celled, and the ovules are borne upon a central expansion, the placentation is free and central. It is one of the characters of the Primulaceæ (figs. 491 to 494) to have a free central placenta. In some of the Caryophylleæ (Dianthus, &c.) the column bearing the ovules reaches nearly or quite to the top of the ovary, the latter often being several-celled at the base, at least when young, and only one-celled at the apex. A common form of axile placenta in the two-celled group is the cylindrical, Scrophularia (fig. 495). Begonia incarnata (fig. 496) has a three-celled ovary, with a placental plate projecting from the axis far into each cell; in fact, nearly reaching the outside, and thickly studded all over with ovules. In Leucopogon Cunninghami (fig. 497) the ovary is several-celled, and the ovules are attached to placental bodies pendulous from the upper part of the inner angle of the cell. It has been stated that parietal placentation occurs only in one-celled ovaries, but something very like it may be seen in the many-celled ovary of Mesembryanthemum edule (fig. 498). The ovules spring from fleshy placentas projecting into the cells from the external wall, and apparently having their origin in it, though in a very early stage of the flower this would appear not to be the case.

W. B. Hemsley.

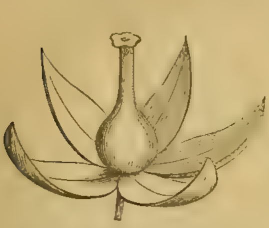


Fig. 493.—Pistil of Anagallis arvensis, with the persistent calyx at the base and an obscurely five-lobed stigma.

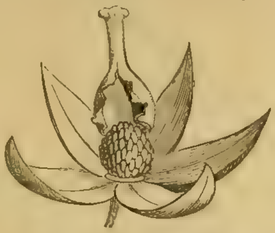


Fig. 494.—Pistil of Anagallis arvensis, the ovary separated from the axis, showing the free central placenta.

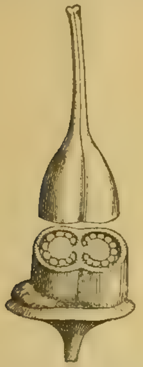


Fig. 495.—Cross section of an ovary of Scrophularia, showing the circular fleshy placentas projecting from the axis into each cell.

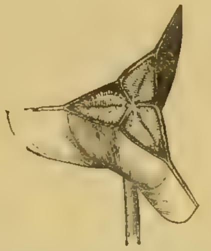


Fig. 496.—Cross section of an ovary of Begonia incarnata, showing the axile placental plates covered with ovules.

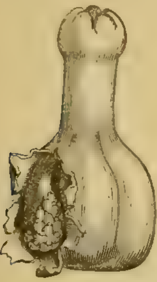


Fig. 497.—Pistil of Leucopogon Cunninghami, with one cell of the ovary torn open, the pendulous placenta covered with ovules.

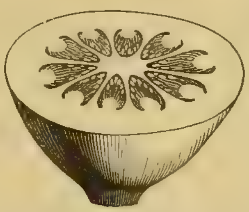


Fig. 498.—Section of the many-celled ovary of Mesembryanthemum, showing the attachment of the ovules to fleshy placentas apparently proceeding from the exterior wall of the ovary.

THE INDOOR GARDEN.

FREE-FLOWERING CACTI.

I have read with much interest the remarks of a correspondent, and also those of Mr. Croucher (Vol. XIII., p. 353), on this subject, for it reminds me of earlier days when I used to read with so much gratification the reports of the grand shows of these plants made by Mr. Green and others, and the interesting articles about them by the late Mr. Beaton in "Loudon's Magazine," and also of the fact that in 1837, in connection with an amateur friend, I imported 150 species and varieties from M. Soulage Boin, of Fromont, who had a rare collection, the list of which was published in the "Magazine of Horticulture" at that time, and is now before me. It was one of the largest collections of Cacti in the United States, and one of them, of which we still have the original plant, a night-blooming kind, called cœrulescens, from its almost sky-blue, cylindrical stems covered with jet-black spines and pure white flowers, is now in bloom. It is growing in a 10-in. pot, and has never been repotted for ten or fifteen years. It has a straight stem 5 ft. high, with a dozen or more branches at the top. This fine collection included also some of the old English sorts, such as Epiphyllum Ackermanni, splendidum, &c. Upon the introduction of Cereus crenatus we thought there was a grand opportunity to produce something new. All the varieties we had were scarlet, or lighter or darker shades of the same colour. The experiments were commenced by fertilising the scarlet kinds with the white C. crenatus, and *vice versâ*. The result was, as I anticipated, very beautiful varieties, ranging in colour from the most delicate salmon-pink to deep crimson-scarlet and the most brilliant violet; some of the flowers measuring 10 in. in diameter. These experiments were repeated, and I still have a quantity of seedlings that have not yet flowered. The result so far has been the selection of about twenty varieties, all distinct, which have been named and described. Among the unbloomed seedlings are some from C. Macdonaldiæ, fertilised with the brilliant scarlet seedlings. The growth and habit are entirely new. The best of the several varieties are the following: Exquisite, clear orange-salmon with a pale violet tint; Mauve Beauty, mauve, deeply tinged with violet; Orange Gem, clear deep orange, tinted with violet at the base of the petals; Pink Queen, beautiful mauve-pink and very large; refulgens, dark scarlet with deep violet shading; and superbum, salmon tinted with violet-magenta, and very large. Cereus C. M. Hovey is one of the best varieties ever produced, the entire flower being of a clear blue-violet tint, with an extra row of petals, and 8 in. in diameter. The night-blooming kinds with us are C. Macdonaldiæ, C. triangularis, C. grandiflorus, C. nyctacaulis (creamy-white), C. cœrulescens, and Epiphyllum Phyllanthus. The last is one of the best, because its flowers so much resemble pond Lilies, and remain in beauty two or three days, though partially closed. A specimen 6 ft. high, with fifty or sixty of its pendulous, Lily-white flowers, is a beautiful object. I have not seen the rose-coloured kind (C. Schranki) which Mr. Croucher names, and should like to have it, as it has been my object to produce a delicate rose-coloured flower as fine in form and large in size as C. crenatus. I have salmon, salmon-rose, and mauve-pink, but have never had a pure rose, except the old Epiphyllum speciosum. Mr. Croucher has not seen anything among the hybrids equal to the old C. speciosissimus. Its beauty is unquestionable, but I have sent Mr. Croucher a plant of my finest variety, C. M. Hovey, and shall be glad to have his opinion of it after he has seen it in flower. It is of dwarf habit, something in style of growth like C. speciosissimus, but it has three rows of petals, and the colour is of the deepest glowing violet throughout, set off by a tinge of scarlet on the outer row of petals. The Echinocactuses are pretty plants and flower freely, especially Ottonis, Eyriesi, and multiplex, but they are not quite showy enough for general purposes. Cacti having been always favourite plants of mine, I have been surprised that they are not more extensively cultivated. They will bear more neglect than any other flower, and yet produce a grand display of showy flowers.

C. M. Hovey.

Boston, Mass.

LARGE-FLOWERING OR SHOW PELARGONIUMS.

The old practice of placing plants of Pelargoniums out-of-doors when they have done flowering is a good one, because it tends to ripen the wood, and the importance of well-ripened wood for cuttings cannot be over-estimated, especially when the cultivator is put to shifts in the way of striking them. To somewhat lessen labour, the plants that have done flowering should have some shade during the day, so that attention to watering be reduced a little. It is not wise to ripen off the wood too rapidly by keeping the plants very dry and fully exposed to the sun, as this tends to wither and attenuate the wood, and indifferent cuttings result. The stouter and fuller the wood, and the more vigorous the cuttings, the better will be the plants obtained from them. For ordinary purposes of house decoration, it is not advisable to keep plants after they are three years old. It is desirable to do so when plants are wanted for show purposes, as old bottoms are necessary to get plants of large size. Two-year-old plants, *i.e.*, plants cut back in the previous autumn after flowering for the first time, make very excellent plants for house decoration if properly managed; but, as a rule, those who are not well up in Pelargonium growing will be more likely to succeed best with yearling plants. There is neither difficulty nor mystery in striking cuttings of show Pelargoniums. They can be put into a prepared bed in the open ground, in shallow boxes or store pots, and placed out-of-doors; they root readily enough and freely. If the cuttings are put into store pots—and this is, perhaps, the easiest method of going to work—they should be well drained and filled with a light sandy soil; let there be sand and leaf-mould in good proportions, and the cuttings pressed hard into the soil. They will not need water for two or three days, but may be syringed occasionally. The pots can be placed anywhere,but not too fully exposed to the sun,and in a few weeks the cuttings will be rooting freely. When sufficiently rooted to be potted off, let them be put singly in small 3-in. pots; and, when well established, the strongest can go into large 4-in. pots to winter. I have wintered a great many plants in a cold greenhouse in which there is no fire-heat simply by keeping them in the warmest part of the house and dry at the roots. In the dull months young Pelargoniums will last a long time without water, but directly a mild sunny day comes, a little water should be given. In the spring, when growth commences, shift into pots a size larger, and grow them on as vigorously as possible. We have yet to deal with the cut-back plants it may be desirable to save. After being deprived of their branches they will soon begin to break into growth. Then is the time to repot. Make up a soil of good light yellow loam, some decomposed manure that has been reduced to powder by decay, leaf-mould, and sand. This suits Pelargoniums well, as it simply needs to be rich and light. The soil and pots ready, the plants should be turned out, a great deal of the soil crumbled away, and the thick long roots cut off, leaving only the fine fibrous roots, and then repot in the smallest pot in which the plants can be put, at least a size smaller than the pots in which they were previously growing. When potted, they should be kept close for a few days till the roots begin to move. A final shift should be given in September or October, according to the progress made; and the plants be kept growing a little all the winter. My greenhouse has been very gay with cut-back specimens; and now that these have done flowering, the floral service is taken up with fine young plants, in 4 in. and 6-in. pots, obtained from cuttings struck in October last. These were kept pinched back up to the middle of June, and then allowed to grow freely. Such varieties as Empress, Rob Roy, Duchess of Cambridge, (very bright), Triomphe de St. Maude, Heroine, and a few others are now very gay, carrying full trusses of bloom. I have been using a little of the buffalo-horn manure in the soil, to the manifest advantage of the plants. It is a good and safe manure, one that can be recommended to amateurs for potting purposes. My recommendation is given only after repeated trials. I have seen the good results arising from this manure, and in consequence can confidently recommend it. D.

Veronicas as Cut Flowers.—Some of the herbaceous Veronicas, often too evanescent in bloom out-of-doors, live after cutting for a considerable time; the flowers of the spike, unopened when cut, expanding freely in a room.

Calanthes in Small Pans.—Calanthes succeed remarkably well in 5-in. pans about 3 in. deep, suspended from the roof, so as to bring the plants as near the glass as possible. Thus situated, they make vigorous growth and fine bulbs, which ripen well, and never fail to produce large spikes of blossom. In this way we find them treated in Messrs. Veitch's nursery at Chelsea.—S.

Erica cerinthoides coronata.—This is one of the best of the hard-wooded Heaths. As a rule, it is rather a shy bloomer, but this fault is in some measure counterbalanced by the size and beauty of its blossoms. They are produced in large whorls, and are bright orange-scarlet in colour —S,

PROPAGATING.

Hollyhocks.—The best modes of increasing these are by means of tops, as shown in fig. 1, and single eyes, as in fig. 2. As soon as the plants have done flowering cut them down to about 6 in. from the ground, when they will soon produce numerous shoots. When these have made, say, three pairs of leaves, they should be taken off, the bottom pair of leaves should be cut off, and the cuttings inserted singly in 2½-in. pots. The soil should consist of maiden loam, decomposed cow manure, and a little silver sand and charcoal dust mixed together and sifted fine. Put a little of the rough siftings at the bottom of the pots, press the cuttings in rather firmly, and give a good watering, taking care not to wet the leaves; then plunge them in a gentle bottom-heat, and keep them close for three or four days without water, when they may be examined, and if too dry they should be taken out and watered. If treated in this way the young roots will show themselves through the bottom of the pots in three weeks or so, when they may be removed to another part of the pit, where they should have a good watering and be gradually hardened off. In increasing Hollyhocks from eyes, the middle part of the stems must be selected; cut it into pieces 1¼ in. long, and split the wood down the centre. Dusting with dry powdered charcoal before inserting in the soil is a good preventive of rotting. Hollyhocks thus treated must not be covered, but should merely be plunged in a gentle bottom-heat, and watered very sparingly till the eyes have grown a little, when they may be sprinkled overhead, with the view of inducing more rapid growth. They should not be repotted until the pots are tolerably full of roots. H. H.

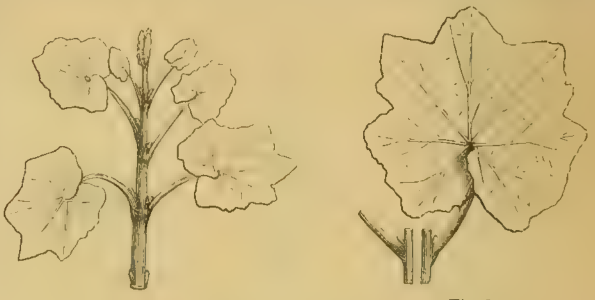


Fig. 1. Fig. 2.

Cuttings of Hollyhocks.

Propagating Double Primulas.—"H. H." propagates double Primulas in the very way I do myself. I have this year struck 400, but my cuttings take at least six week to be ready to come out of the propagating cases, while "H. H.'s" are ready in half that time. Surely one of us is in error.—R. Gilbert, *Burghley.*

Petunias from Seed.—Where large quantities of summer-flowering plants are required for beds or borders, the many beautiful varieties of Petunia that are so easily raised from seed are most useful, being of easy culture, of quick, luxuriant growth and most persistent bloomers. They also require comparatively but little space under glass. Seeds sown in pans or boxes, and placed in an ordinary Cucumber frame in March, will, if the young plants be pricked off and gradually hardened, be good material by the end of May. The purple and striped varieties are very effective, and rosy-pinks, such as Countess of Ellesmere, are well adapted for back rows in shrubbery borders or centres of large beds. Like most of this class of plants, they have been so carefully selected for seeding, that the produce is more like that of named varieties than seedlings.—J. G.

Lilacs from Seed.—At a recent meeting of the French Société Centrale d'Horticulture, M. Carrière exhibited a fruit-bearing panicle of the Lilas Varin, the capsules of which contained a number of ripe seeds. He showed this specimen by way of proving that this Lilac was perfectly capable of producing excellent seed contrary to what has been been generally thought and asserted up to the present time. M. Baillon, in laying this sample before the Society in the name of M. Carrière, said that the property possessed by this shrub of being propagated by means of seed had already been pointed out in the "Revue Horticole" for 1877 (p.403). M. Baillon also laid before the Society, on behalf of M. Carrière, a number of wood engravings showing the capsule, the seed, and the mode of germination of the Lilas Varin. By sowing the seeds which he had collected, he obtained the variety of Lilac with laciniated leaves, which was generally supposed to be the laciniated Persian Lilac. M. P. Duchartre asked M. Baillon whether, in the light of these facts, the Lilas Varin ought to be looked upon as a distinct species, as a hybrid, or as a true variety, but M. Baillon declared himself unable to answer these questions.—C. W. Quin.

ANSWERS TO CORRESPONDENTS.

Eradicating Bindweed.—In last week's Garden "B." gives (p. 165) a very good mode of destroying this obnoxious weed, but he adds that perseverance is required for several years to render the system successful. Allow me to state that by manuring and digging the ground thoroughly well, and afterwards planting it with Flat Dutch Cabbage (I have tried no other), it will at the end of one year be as free from Bindweed as if it had never existed.—Thos. Spelman

Slugs in Ferneries.—Can you kindly inform me how to get rid of slugs? I have tried Lettuce leaves, but they only attract a few.—New Cross. [Place little hillocks of bran about the Fernery and examine them every morning, destroying the slugs and renewing the bran.]

The Blue Gum Tree.—Can you give any information as to this Gum tree growing out-of-doors in England, sustaining our winter? [We saw the other day two examples of it 12 ft. high, in perfect health, in the Nottingham Arboretum. It will withstand mild winters in this country, but not severe ones. Many trees of it at Chiswick, consisting of some of considerable size, were killed to the ground in the winter of 1860-1.—M.]

Veitch's Autumn Giant Cauliflower (p. 143).—We have never seen this sort produce purple heads, but in the present case we should say that it has been sown at the wrong time. This Cauliflower should not come in until October. If sown out of season, the plants are apt to become blind, or to produce greenish-coloured heads.

Transplanting Pampas Grass.—At what time may I with safety move a large clump of this Grass?.—A. [A good clump of Pampas Grass if it can be moved with a good ball, may be lifted at any time in open weather from October to May; if it is to be sub-divided into small pieces, April is the month, after long experience, which I have found best suited for sub-dividing and planting this highly ornamental Grass.—A. Fowler, *Castle Kennedy*.]

Names of Plants.—*L. M.*—The shrub is Pittosporum Tobira; the herbaceous plant Francoa ramosa. *Dorset Vicar.*—Clematises often produce flowers that have more petals than the normal number. Some are semi-double and some wholly double. *R. J. W.*—Phlox Drummondi alba oculata; handsome, but not uncommon. *Anna P.*—Apparently a leaf of some kind of Cow Parsnip (Heracleum). It will probably flower next year.

Melon Seeds Germinating Inside the Fruit.—I was dining with a friend the other day, and at dessert he cut a small golden-coloured, green-fleshed Melon, which contained inside a quantity of seeds which had germinated and produced their two seed leaves on a stalk about ¼ in. in length, and, strange to say, quite green. My friend had cut the Melon himself out of the frame just before dinner. The stalk was dry, but the fruit not at all decayed or apparently over-ripe, and when cut it was as firm as usual, but had very little flavour. Can you explain this, to me, very curious occurrence?—G. T., *Mells*. [In this instance there may have been some crack or crevice in the fruit through which the air had access. The want of flavour tends to indicate this, and that there was something abnormally wrong in the ripening process from the want of heat, or too much moisture at the roots of the plant.—W. T.]

Tacsonia Van Volxemi Shedding its Flowers.—I purchased a plant of this Tacsonia about two years ago, and planted it in a border in a warm greenhouse, and trained it on the back wall, intermixed with a Passion Flower. It has grown vigorously and shown abundance of flowers, but most of them have fallen off in a young state; others have remained until almost ready to expand, and then they have fallen off; the plant, is short, has only brought three flowers to perfection, whilst the Passion Flower has flowered profusely. Will some of your readers kindly tell me the reason of this failure?—T. O. [In the absence of further particulars, we can only suggest that a deficiency of water may have been the cause of the Tacsonia blooms dropping. Try the effect of a good soaking of water. —D. T.]

Heating Pits.—Will someone be so kind as to assist me as regards the arrangement of hot-water pipes for heating a line of brick pits about 6 ft. wide. I am thinking of having two 4-in. pipes (flow and return) back and front for bottom-heat, and 2 ft. under the glass. Should I have troughs on the 4-in. pipes to hold water? and a 2-in. pipe run round for atmospheric heat? For any information on the subject I shall feel obliged.—New Sub. [For a line of brick pits 6 ft. wide, if wanted to grow such tender products as early Melons or winter Cucumbers, two flow and two returns, or two flow and one return 4-in. pipe will not be too much for bottom-heat. For these purposes, too, 3 ft. will not be too much from the glass. For plant growing 3 ft. or more from the glass may also be required. For purposes of propagation 2 ft., as proposed, or even 18 in., may suffice. Better also use 4-in. pipes for atmospheric heat. This will save expense in the end, for coal has to be bought every year—metal, but once; and the more iron, within certain limits, the less coal.—D. T. F.]

Questions.

Barr's Heated Frames.—Will any of your readers who have tried these frames for raising seeds and striking cuttings kindly inform me if they have found them answer? We suffer so much here from slugs, that an ordinary hotbed is never satisfactory. The idea of these frames appears to me very good, but, as they are rather costly, I should like to have the advice of some one who has tried them before trying one.—Dorset Vicar.

Fruit Trees Barked by Sheep.—As some of my fruit trees have been much barked by sheep, I shall feel obliged by your stating the best way to treat them so as to induce the bark again to grow.—A. B.

THE NEW BRIDGE NEAR REGENT'S PARK.

It would be hard to find anything more vulgar and mean in design than certain excrescences of this bridge. It is "ornamented," to use the expression of a reporter, by four wholly needless groups of "statues," three in each group, placed on pedestals of such awkward design, that they spoil any beauty of line which the bridge might otherwise possess. Under each of these groups there is a large placard inscription, affording just such an effect as may be seen on some wall unprotected from the bill-poster on the approach of a theatrical benefit. The lamp-posts have such a redundance of "ornamental" castings, that the designers of public-house gas-fittings need no longer represent the lowest stage of unmeaning design in this direction. It may be noted here that these gross errors in taste concern, for the most part, things wholly apart from the bridge itself. With our noble Thames bridges—some of them the admiration of good judges from all countries—without statues, why was it thought necessary to put as many as four groups of three each on this bridge? If this concerned only the vagaries of some rich imbecile, it could not concern us beyond feeling pity for such a puerile waste of means; but when it concerns public work one is justified in asking, Who allows such waste of public money? A lamp-post, again, is one of those objects which intelligent designers now-a-days consider should be designed in a manner at once simple and elegant. Here the "ornamental castings" seem as abundant as if shot out of barrows. We wonder any person of the slightest sensibility allows his name to be placarded on these hideous tablets—so utterly unlike in their size and wording what would be fitting in such a case. We read on one that this "bridge and roadway *was* opened," &c. Immediately below this gem all the names of the regiments of which the Commander-in-Chief is colonel are given at full length, and all his other titles too—details very well to be given in many cases, no doubt, in books or journals, for example, but surely not on a bridge, which, of all other structures, seems to call for simplicity and dignity in its treatment. The whole thing is an exhibition of bad taste, vulgarity, and snobbishness such as we have not seen for many a day.

PETUNIAS AT ISLEWORTH.

Last week we spoke favourably (p. 147) of some blooms of single Petunias sent to us by Mr. Marcham, of the Springfield Nursery, Isleworth. We have since seen the plants on which they were grown, and can, therefore, speak with more confidence as to the excellence of the "strain." The plants, which number some hundreds, are grown chiefly for seeding purposes. They were raised from seed saved from the best hybridised flowers sown in February, and the plants were grown on in a span-roofed house heated by a flue, under which conditions they succeed better than when grown in a house heated by hot water, inasmuch as a dry atmosphere is best suited for them. When grown in a moist heat, as they often are, the plants become lanky and straggling before commencing to bloom. Mr. Marcham, however, under the conditions named, got his plants in 5-in. pots to bloom early in May when not more than 6 in. in height from the rim of the pot, and by keeping them well supplied with water at the roots, they keep on flowering in the same pots until late in autumn. All inferior plants are sent early in the summer to market; the rest are grown on until August, when fertilisation is commenced, the operation being performed twice or thrice a week whilst the pollen is perfectly dry. Unless properly fertilised, it is almost impossible to get these hybrid Petunias to yield a single seed-pod. The plants are at the present time well furnished with seed-pods, and the flowers, therefore, are not quite so fresh and well coloured as they were some weeks back, but even now they represent the most attractive sight in the way of striped single Petunias which we have seen.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

August 20.

Exhibits at this meeting were comparatively few, the most attractive being several new specimen Crotons from Mr. Williams, of Holloway, cut flowers and a large collection of Abutilons from Chiswick, Dahlias from Mr. Turner, of Slough, and Verbenas from Mr. Cannell, of Swanley.

First-class Certificates were awarded as follows:—

Cattleya Veitchiana (Veitch & Sons).—One of the finest hybrid Cattleyas ever raised. It is the result of a supposed cross between C. Dowiana and Lælia purpurata, or Cattleya exoniensis. Its flowers are very large and deliciously scented. See The Garden, p. 147.

Cattleya Mitchelli (Mitchell).—A distinct garden hybrid, the result of a cross between C. Eldorado and C. Leopoldi. The plant is of medium growth, and its flowers are very distinct in colour and form. The petals and sepals are of brownish transparent violet, whilst the lip is white, tipped with rich purple. It is well worth a place in good collections of Orchids.

Dahlia Prince Bismarck (Turner).—A finely-formed flower, very large in size, with cup-shaped petals of a deep magenta. A fine kind for exhibition purposes.

Dahlia Helen Macgregor (Turner).—A large round flower of fine form, and of a creamy-pink colour, the petals being tipped with bright rosy-purple.

Croton Williamsi (B. S. Williams).—A fine robust kind with large, shining, bronzy-green leaves, richly marked with bright rosy-crimson. Large plants retain the colour in their leaves down to the base of the plant. One of the most showy of Crotons raised for some time.

Plum Rivers' Sultan (F. A. Dancer).—A round, purple Plum, very early and well worth culture.

Seedling Dahlias.—Of these Mr. Turner, Slough, showed, in addition to Helen Macgregor and Prince Bismarck, elsewhere described, Robin Adair, a brownish-cinnamon-coloured kind; Miss Molly, a good lavender flower of fine form, the petals being remarkable for the absence of the cup shape found in most Dahlias; Queen of Italy, pinkish-orange; John Ashley, brilliant scarlet; and Amy Robsart, bright violet; all good kinds. A Pompone Dahlia, named Lady Blanche, was remarkable for its floriferous character and well-formed, creamy-white blossoms. Mr. G. Harris, Orpington, sent Dahlia Loyalist and D. Barrister, neither of which were considered better than existing kinds.

Miscellaneous Subjects.—Mr. B. S. Williams exhibited a group of Crotons and Coleuses. Croton Harryanum was conspicuous for its strong growth and large golden-yellow leaves; C. Williamsi, a good new kind, is alluded to elsewhere. The Coleuses named Kentish Fire and Lord Falmouth differ from other kinds in cultivation.

A cultural commendation was deservedly awarded to Mr. Johnson, gardener to T. T. Clarke, Esq., Uxbridge, for two potsful of Vallota purpurea, said to have been raised from seed. The best pot, a 12-in. one, contained no fewer than twenty strong flower-spikes, most of which were surmounted by from four to eight large, brilliantly-coloured blossoms.

Messrs. Laing & Co., Forest Hill, sent a plant of Begonia Mrs. J. Elwes, belonging to the Piercei type, with whitish flowers. Being very floriferous, it seems well adapted for decorative purposes.

Mr. Cannell, Swanley, again sent a large collection of Verbenas, which were, if possible, even more brilliant than those which he previously exhibited.

A fine collection of double Zinnias came from the Society's gardens at Chiswick. A large collection of Abutilons, cut flowers of Dianthus Heddewigi and Phlox Drummondi were also shown from the Society's Gardens, all of which were very fine and well worth notice.

Mr. Green, gardener to S. G. Macleay, Esq., Pendell Court, Bletchingly, sent cut spikes of Gladiolus dracocephalus, and a hybrid Nymphæa named Eugenie, of a pinkish-rose colour, the result of a cross between N. Devoniana and N. Lotus; also cut flowers and leaves of Carica cauliflora; likewise blooms of Begonias cut from plants grown in the open ground, to show how much brighter in colour they become when exposed to the open air than when indoors.

Mr. G. F. Wilson, Weybridge, showed Lilium Leishmanni and a flower of the true old L. speciosum rubrum, remarkable for its fine colour.

Mr. R. S. Yates, Sale, Cheshire, sent a fasciated spike of Lilium auratum furnished with 150 medium-sized flowers.

Sir Trevor Lawrence contributed a plant of Odontoglossum Reichenheimi bearing a flower-spike 3 ft. long, with blossoms having chocolate and yellow-spotted petals and brownish-purple lip, broadly tipped with delicate mauve; also Dendrobium McCarthiæ superbum, from Ceylon, bearing large, gracefully-drooping, mauve-petalled flowers with rich purple throat and purple-tipped lip.

Fruit.—Messrs. William Paul & Sons showed a collection of early Apples, among which were Duchess of Oldenburg, Manks Codlin, Councillor, Kerry Pippin, Emperor Alexander, and Lord Suffield. A collection of Apples also came from Chiswick. Mr. F. A. Dancer contributed Victoria and Rivers' Sultan Plums; and Mr. Hinds, Otterspool, furnished a bunch of Golden Champion Grapes, large in size, but otherwise of no particular merit, most of the berries being spotted and unripe. Collections of Melons, none of which were above mediocrity, were also shown by several growers.

Lilium Batemanniæ.—This can hardly, in my opinion, be regarded as one of the Thunbergianum group. It is true that the flower is, in colour, like that of L. Thunbergianum venustum, but there the resemblance ends. The bulb has broad, stout scales, the first tier reaching only half-way up the bulb. In that respect, therefore, it is more like the bulb of L. Maximowiczi or Leichtlini than that of Thunbergianum, whose scales are thinner and longer, and reach much higher up the bulb. Next, the height of the slender stem, 4 ft. to 5 ft., crowded with long, narrow, lanceolate, arching leaves, in no way reminds one of L. Thunbergianum, whose stems, measuring from 1 ft. to 2 ft. only, are stout, and possess broad, dark green, stout, erect, or semi-erect foliage. Therefore, the habit of the plant clearly resembles that of L. Maximowiczi or Leichtlini, but the flower is very similar to that of Thunbergianum armeniacum (venustum). It is quite a distinct and new form.—A. Wallace.

—— The Lily proposed by Dr. Wallace to be named after Mrs. Bateman is certainly a useful one, especially in Lily nosegays. I do not, however, agree with him in its resemblance to the very graceful L. Leichtlini. A number of bulbs were sold a year or two ago at Stevens', so I dare say there are a good many plants of it in the hands of Lily growers. Dr. Wallace speaks of it as "hitherto unnoticed in England." I have more than once thought of taking up a pot to the Floral Committee of the Royal Horticultural Society, but, believing that it would be considered only second-class, and have a certificate accordingly, I have not done so. I recently exhibited it among cut Lilies at Marlborough. Mr. Perry, of the Hale Farm Nurseries, Tottenham, lately sent me a Lily flower to name. In my Lily book last year a note is made that it was like the tall umbellatum citrinum. I suspect that we shall receive many hybrid Lilies from Japan, and that this will prove one, and that the one which I took up on Tuesday last to the Floral Committee will prove to be another. Having a flower of L. Leishmanni out, and having never before seen this Lily, I took it up to have the name verified. It has the spots of L. tigrinum and bits of wool on the stem, but no stem bulbs, and it has not the habit of L. tigrinum.—George F. Wilson, *Heatherbank, Weybridge Heath.*

The Proposed New Experimental Garden.—I notice (see p. 125) a suggestion in reference to the formation of an experimental garden, to be placed under the management of Mr. Thomas Laxton. No man is more capable of conducting such a garden, a statement in confirmation of which we have only to look back upon the work which he has done. Taking first his Peas, who does not know and appreciate William I. and Omega? and, doubtless, one or two others to come out shortly, namely, Marvel and Sturdy, will be equally esteemed. I have these two just now in bearing, and for crop, colour, and flavour they are unsurpassed. I could write a volume in favour of the good things raised by Mr. Laxton, but will here only mention two more, namely, Crown Jewel Pelargonium and Mrs. Laxton Rose. These are both valuable acquisitions, and, unlike many so-called novelties that die in a year or two, will live long amongst us. I shall be most happy to become a subscriber to the garden in question, and will do all I can to make the project a success. In starting such a garden, a committee should be formed, and rules and regulations printed; then I feel sure that subscribers will be found, and I hope to see Mr. Laxton once more in his element, and giving us novelties at present unheard of.—R. Gilbert, *Burghley.*

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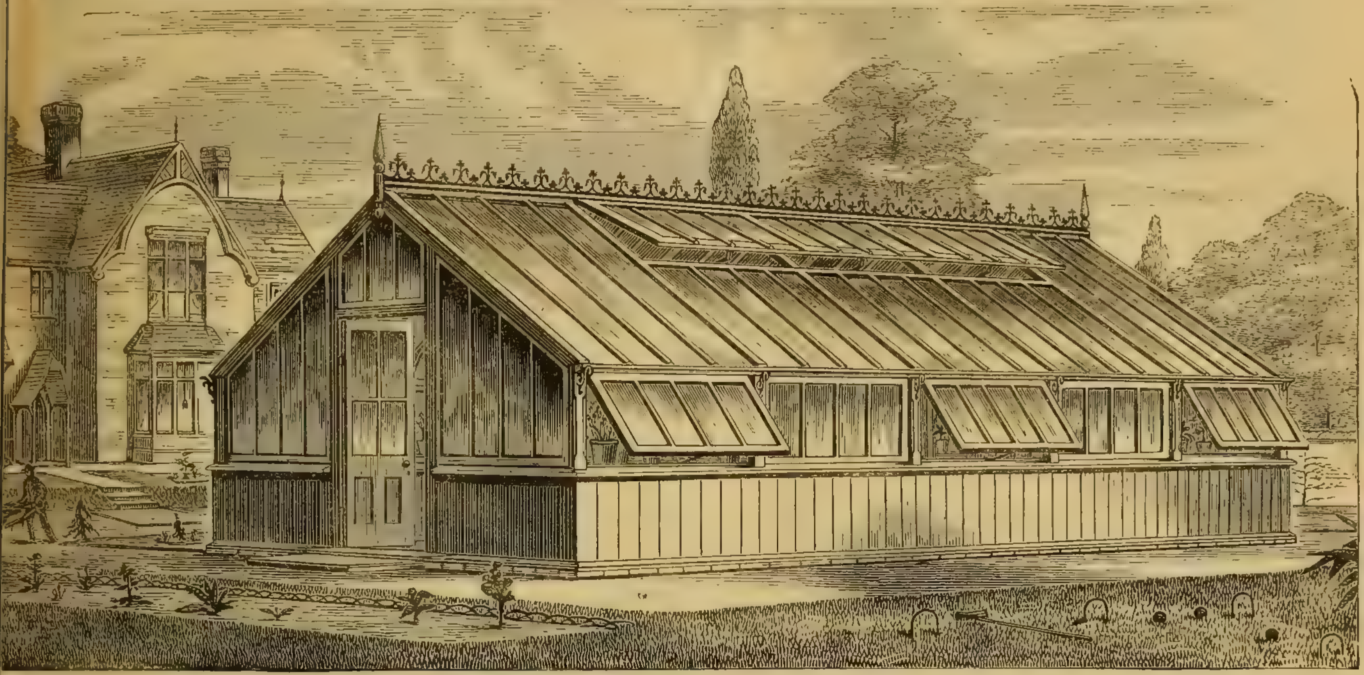

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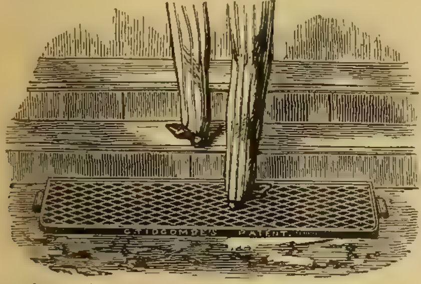
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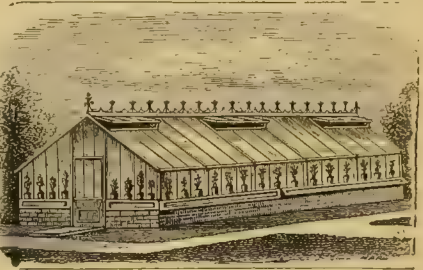

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Pelargoniums, per doz. sprays	0	6	1	0
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Leeks, per bunch	0	4	0	6
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Mustard and Cress, per punnet	0	2	0	0
Onions, per bushel	5	0	0	0
Onions, button, per quart	0	4	0	6
Parsley, per doz. bunches	2	0	4	0
Potatoes, per bushel	4	6	7	6
Radishes, per doz. bunches	1	0	1	6
Rhubarb, per bundle	0	6	1	0
Salsafy, per bundle	1	0	2	0
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No. 354.] SATURDAY, AUGUST 31, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

BEGONIAS AND PELARGONIUMS AT M. LEMOINE'S.

ALL lovers of flowers, if on the Continent, should visit M. Lemoine's gardens at Nancy. They are but a short distance by rail from Paris or Brussels. Being at Paris and desirous of seeing his Begonias and Pelargoniums, for the excellence of which he has a wide-spread reputation, I visited Nancy and met with a most cordial reception. The gardens are but a short distance from the station at Nancy, and are easily found by a stranger. I found M. Lemoine among his Pelargoniums, admiring them with the eye of an enthusiast, which, indeed, he is, over Begonias and Zonal Pelargoniums. His double Zonal Pelargoniums are, indeed, wonderful; they are of all shades of colour and habit of growth. He has accomplished almost perfection in this most useful of plants. He has two houses, 75 ft. by 20 ft., which are now one sheet of bloom, all the shades of colour being present which we find in the single varieties, and there is a generous sprinkling of good double white varieties. Lucie Lemoine is a particularly fine dwarf, free flowering, pure double white, and, associated with it, were the following new ones not yet sent out, viz., Triomphe de Nancy, bright orange red, with the reverse of the petals salmon-rose, truss very large; Nymph, a kind with unusually large trusses of a delicately tinted white colour; Le Violet, a sort with small trusses of a beautiful violet shade, habit dwarf, and very floriferous; La Lorraine, with trusses of unusual size, of a salmon-buff colour; Psyche, semi-double, beautiful deep rose, almost tending to carmine; Le Centenaire, crimson-purple, suffused with red, trusses very large; also some new shades in orange and salmon single Pelargoniums as yet unnamed. Those which I have named are only a few out of two houses, consisting wholly of fine kinds. M. Lemoine's seedling Pentstemons are also very fine, and likewise his Delphiniums. The following were some of the finest double sorts: Trophée, Nancy, Illustration, Stuart Mill, Suffrage, Livingstone, La Lorraine, and Rayon de Soleil. He has many fine seedlings as yet unnamed, to be sent out next year, as full and double as Ranunculus flowers. But his Begonias! They must be seen to be believed. He has about 15,000 seedlings, all planted in the open ground in beds 4 ft. wide by 50 ft. in length, and partially shaded by means of lattice work from the sun. Several of these beds consist of small seedlings; others are flowering now for the first time, and of these very many promise to be exceedingly fine. The most wonderful sight is four beds of the larger plants, selected varieties not yet in the trade. They are indeed magnificent, and alone are worth a visit to Nancy. Both single and double varieties of a great number of colours may be found amongst them, from the deepest scarlet to a pure white; and some are so very large and double, that they reminded me more of small Hollyhock flowers than anything else with which I can compare them. While some are easy of propagation and multiply rapidly, others are just as slow, and it is many years before M. Lemoine has plants sufficient to enable him to offer them to the trade. A very fine single variety with very large flowers he has had several years, and as yet has only had five plants of it; it will, however, be worth waiting for. Of the varieties in flower, the finest which I saw were Lemoinei, President Burelle, W. E. Gumbleton, Gloire de Nancy, Louis Thibaut, Marie Lemoine, Sceptre, Emile Lemoine, and Miracle, all particularly noticeable amongst a hundred others; also the following new varieties not yet sent out: No. 2, Madame la Comtesse Horace de Choiseul, a very fine double kind of a most beautiful and delicately-tinted white; flowers very full and imbricated. No. 3, as yet unnamed; flowers very double, full, and of a dark rose colour, resembling, as M. Lemoine says, Bengal Roses; habit erect and tall. No. 46, rosæflora plena, erect in growth and very fine; one of the most double and similar in habit to the single. No. 48, Prof. Edouard Morren; flowers very large and full, of the most intense fiery scarlet. No. 55, unnamed; flowers very full and imbricated like a Camellia, and of a beautiful dark red. These are only a few out of many fine sorts, and the grand or great grand parents of all these were, B. Pearcei, B. Veitchi, and B. rosæflora. Truly, M. Lemoine has had wonderful success with his Begonias, and also with zonal Pelargoniums! He has many glasshouses, and about 10 acres of land well cultivated; he has, moreover, some remarkably fine seedling Lantanas, also Fuchsias, amongst which are some fine new hybrids of the F. Dominiana type, some new Phloxes, and, in fact, many new plants well worth seeing. C. H. HOVEY.

JAPANESE GARDENING AT LAMPORT HALL.

By Sir CHARLES ISHAM.

THE Japanese pigmy trees figured in the last number of THE GARDEN (p. 174), and also the one in the number for August, 1874 (p. 99), are valuable as demonstrating what it is possible to accomplish in that way. There is here a rockery in which Abies pygmæa and other dwarf trees are cultivated with the greatest care. One, with a double stem, twenty-five years old, is but 9 in. high, although the top has never been shortened; others, fifty years old, are 2 ft. 6 in., with dense or branching heads, and what with their visible roots, which also receive careful attention, and the pigmy and miniature Ivies growing up them, I think it not presumptuous to denominate it a Japanese rockery. I am anxious to know whether there is any other of the kind in England, or even in Europe, for, although not a great traveller, I would go a long distance to see it. The one in question was commenced in 1847, and there has seldom been a day out of nine months of the year that it has not had some hours devoted to it. I fancy I could give even the Japanese a hint or two. There is another class of plants which may be quickly converted into miniature trees, viz., the Retinosporas; indeed, there are few shrubs which, by the aid of shears and fine-pointed scissors, could not be more or less adapted to the purpose. There will doubtless be an outcry against "mutilating" such naturally beautiful objects, but I have never been able to see why these should not be trained as well as bedding plants, the chief difference being that the labour of training a flower bed confers a benefit of but short duration, whereas an hour's work at a Japanese tree may be visible for a lifetime, and even may go down to posterity. Having decided opinions on the matter, I affirm that there is not a tree or shrub, large or small, which may not be more or less improved by treatment, and that the miserable bushes which so frequently disfigure our parks and gardens might, many of them in a few hours or minutes, be converted into picturesque objects. Nature provides the raw material, which is capable of being developed. A straight, crooked, drooping, or prominent-rooted tree, such as the Beggar's Oak at Bagot's Park, might each have its character manifested to a greater extent and become still more striking and beautiful. Distortion, such as the Japanese adopt, should not be encouraged, but the natural growth of a tree bears assisting, as do the natural faculties in a child. Foresters may disagree with me, but they usually only consider a tree as so many feet of timber, and, therefore, they should be the last persons to consult on such matters. It is clear that however much we may love Nature, art may also have its merits. Flax is beautiful when growing, so it may be when converted into a table-cloth. The subject of training dwarf miniature trees, to do it justice, would require a volume with photographs; but their beauty must be apparent to all who have seen them; and this, I believe, may be increased beyond a dream when they become venerable with age, and more miniature ones with Alpine plants cover the ground amongst their roots. Diminutive figures under the trees, such as Loudon idealised in a woodcut in one of his books, but which he had never seen carried out, add greatly to the charm, and when done properly, are the admiration of most beholders. I should be happy to show my garden to any one interested in horticulture; like all other earthly things, it is capable of vast improvement; but that is only accomplished by time and constant attention. Lamport Station is three-quarters of an hour from Blisworth, on the London and North-Western Railway.

ARBUTUS ANDRACHNE.

Of all the varieties of the genus Arbutus this is, in my opinion, the hardiest and best. The true variety is not often met with; I, however, recently saw several large bushes of it in the pleasure grounds at Eastnor Castle; there was also growing near them a bush of A. procera. The latter has large, handsome foliage, but it is scarcely so hardy as Andrachne; neither is its bark so bright and red. This latter is a striking and distinct feature of A. Andrachne. Arbutus hybrida is also hardier than A. procera, and is but little inferior to A. Andrachne. There is a magnificent specimen of it growing in Bath Park; it is about 25 ft. high and 30 ft. in diameter of spread of branches. The appearance of this (I may say) tree in autumn, with its waxy, Lily of the Valley-like flowers, when in blossom, or during winter, when laden with its golden and red fruit, is a sight to be taken note of and one which will hardly ever be erased from the memory. Arbutus Andrachne is, I believe, rather scarce in the trade, and probably A. hybrida may often be substituted for it, the latter being more plentiful. The two kinds are, however, very distinct when seen growing together; the leaves of A. hybrida are roughly serrated, while the foliage of Andrachne is broader and rounder, and slightly, if at all, serrated. My advice to planters who wish for a superior evergreen shrub, and who have not already secured it, is to buy Arbutus Andrachne. George Berry.

Longleat.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Desfontainea spinosa.—I have a bush of this 6 ft. high, and proportionately round, that flowers for ten months every year in the open air. Last autumn some insect bored holes at the base of every flower, and so extracted the honey. Can any one tell me what insect it was? The flowers continued to be attacked long after wasps had disappeared.—H. F.

Althæas in London.—Just below Holland Park, on the Kensington Road, is a fine specimen of a dark lilac-flowered Althæa in full flower. About six such shrubs in the Park Lane Gardens would have a fine effect.—J. S.

Acacia melanoxylon.—This flowers freely. I have a stump of one 51 in. in circumference 18 in. from the ground. When the old tree failed, or was blown down, young shoots came up, one of which is now 30 ft. high.—H. F., *Rosehill, Falmouth.*

The White Shrubby Hibiscus.—There is a pure and delicate white variety of this valuable shrub now in flower which deserves the attention of all interested in good autumn blooming shrubs. To us it seemed more beautiful than any of the coloured forms, and good white shrubs that flower in autumn are not common. This white variety may be seen in a small state among the shrubs at the Paris Exhibition.—V.

Menziesia polyfolia alba.—This, though a most interesting plant, is comparatively little grown in private gardens. Either as a pot plant or grown in beds or borders, it grows freely and yields a succession of white waxy blossoms, equal in appearance to those of the Lily of the Valley. A large bed of it in the Tooting Nursery is now quite a mass of blossom, and it has been in that state for these four months past.—S.

Hydrangea paniculata grandiflora.—I have some plants of this hardy shrub in fine bloom. The flower-heads, which vary from 8 in. to 10 in. long, and from 6 in. to 8 in. broad at the base, are borne on the end of the current season's shoots. A rich soil to grow in, and a thick mulching with manure in spring, is the kind of treatment which this Hydrangea requires to produce vigour in growth and a profusion of huge panicles of flowers.—G. B.

The Blue Gum Tree.—At Penmere, one mile from Falmouth, there are several of these trees over twelve years old. One of them is about 50 ft. high, and its trunk, 2 ft. above ground, measures 39 in. in circumference. I have a tree five years old about 25 ft. high. —H. F.

Acacia dealbata.—This flowers freely every spring with me both in a young and old state.—H. F., *Rosehill, Falmouth.*

NOTES OF THE WEEK.

Coreopsis nudata.—This rare aquatic, a Composite from North America, deserves special mention, not only for its rarity and very peculiar structure, but also on account of its beauty. It grows about 2 ft. high and bears numerous deep purple flowers 1 in. or more in diameter. The leaves are upright, round, just like those of a Rush, and totally unlike the foliage of any cultivated member of this well-known and favourite genus. In a wild state it grows in company with some of the Sarracenias in the North American marshes, and, under cultivation, does well with its pot plunged nearly up to the rim in water.—G.

Watsonias.—These are now beautiful in Mr. Ware's collection. A white one (W. alba) is particularly beautiful and graceful. W. rosea, with its large purple-pink flowers, is a good companion to it.

Small Pomegranate Bushes in Flower.—In the Paris markets now there are little bushes of one of the small varieties of Pomegranate not more than 8 in. through the head. They are little standards supported on slender stems about 15 in., high and sparkling with bright flowers and buds. This is one of the plants one would like to see in our markets, but perhaps it is better markets should not be all alike; in any case it is very interesting to see these and the pigmy Oleanders when one goes abroad.

Phalænopsis grandiflora.—A new importation of plants of this beautiful Orchid, now flowering freely in Messrs. Veitch's nursery, shows a marked improvement in their flowers on any we have before seen. The blossoms are of perfect form and of the purest white, the lip being slightly tinted with golden yellow. Even small plants at present bear flowers which measure over 4 in. across.

Sedum trifidum.—This old, yet uncommon, Himalayan Stonecrop is one of the prettiest rock plants now in flower. Its slender, procumbent stems bear at the tops rosettes of deeply-toothed, lance-shaped leaves, in the centre of which is a tuft of bright rosy blossoms. Why it is so uncommon I cannot imagine, as it is one of the easiest of plants to grow and propagate.—A.

Sagittaria variabilis.—This interesting aquatic plant is now flowering for the first time in a tank in the Wellington Nurseries. It grows about 18 in. high, and its leaves, which are very narrow, vary very much in form. Its flowers are pure white, with green stamens, and, as a water plant, it will doubtless be appreciated.

A Fine Lilium auratum.—We have received from a correspondent at Leytonstone a very fine example of this Lily, said to be a cross between auratum and lancifolium rubrum. In the flower sent, however, we can discover no trace of the latter variety. It measures from 11 in. to 12 in. across, and the petals are 2½ in. broad, gracefully recurved, and beautifully spotted. It is one of the best forms of Lilium auratum we have seen.

Rubus nubigenus var. macrocarpus.—A coloured figure of this remarkable Rubus is given in the last number of "L'Illustration Horticole." It has red flowers and large, bright crimson fruit, which seems to be produced in profusion. It is stated to have been sent to M. Linden from the Andes of Bogota in 1876.

Two Rare Orchids.—The white drooping-flowered Phajus Dodsoni is now blooming freely in the Holloway Nurseries. It is quite distinct from any other Phajus and is well worth culture. A good plant of the new Odontoglossum pardinum is also showing flower in the same establishment.

Viola Loveliness.—This Viola sent out this year by Mr. Williams, of Holloway, will be found to be a valuable addition to the already numerous varieties of that class of plants. Its flowers are very large, of fine form, and of a rich plum colour. It grows well and flowers freely all through the summer. We have lately seen several good beds of it in gardens about London.

Anemones, Phloxes, and Begonias.—Established plants of the beautiful Anemone Honorine Jobert, tall-growing Phloxes, and Begonias make an effective combination on a piece of rockwork in Messrs. Veitch's nursery at Chelsea. Planted in deep sandy soil, the plants are healthy and vigorous, and, associated with hardy shrubs, &c., they show what can be done in the way of effective gardening, even within reach of the London smoke. The plants used are all hardy, but they are all the better for a little protection in the way of a few inches deep of ashes round their roots in winter; while such effects as we find here can be produced in the smallest London gardens, we are surprised that people incur the trouble of filling their flower beds with Geraniums and other tender bedding plants, which are far more expensive to keep, and certainly much less attractive.

Although the Begonias consist of nearly all the best known kinds, none are so attractive at present as Emperor, which can be seen in the form of specimens 2 ft. to 2½ ft. high and as much through, loaded with blossoms. These have been wintered out-of-doors for several years.—S.

Anchusa incarnata.—This pretty hardy plant, grown in a pot in Messrs. Rollisson's nursery at Tooting, has been yielding abundance of pretty flesh-coloured blossoms ever since last May. It grows about 2 ft. high, and is, in every way, well worth adding to good collections of hardy plants. It seeds pretty freely, and will, therefore, soon become plentiful.

Bouvardia angustifolia.—This is one of the oldest of the Bouvardias, but still well worth attention. Either in pots or in beds out-of-doors, under good culture, vigorous plants of it 4 in. or 5 in. high, profusely laden with bright scarlet flowers, may be secured at nearly every season of the year.

Lobelia Emperor William.—This is one of the best of Lobelias of the speciosa type. It is compact in habit, and its flowers, which are very large, are of good form and of a deep blue colour. It is grown largely in Messrs. Rollisson's nursery at Tooting.

Nymphæa odorata minor.—For growing in small tanks or in glass vessels in rooms this plant is admirably adapted. Its leaves, which are small, are round and of a reddish-bronze colour on both sides. Its flowers, which are not half the size of those of the common Water Lily, are produced freely; they are exquisitely formed and of snowy whiteness, the stamens being sulphur-coloured. In a cool conservatory or greenhouse where a tank exists, this Lily will flourish, and it will even withstand severe frost. It is now flowering freely in the Wellington Nursery.

Pancratium fragrans.—Finely flowered plants of this beautiful Amaryllid were lately to be seen in Mr. Williams' nursery at Holloway. Some of them were furnished with flower-spikes bearing a whorl of twelve unusually large pure white deliciously scented flowers. Comparatively few people grow this Pancratium, which is surprising, considering its easy culture and its effective character when in bloom. For the centres of bouquets the flowers are unsurpassed, and they last in good condition a long time in water. A small-flowered variety is now very beautiful in Covent Garden Market, where it is much prized for its purity of colour and sweet perfume.

Symphytum asperrimum variegatum. — This is a new variegated form of the Prickly Comfrey now in Messrs. Henderson's Nursery at St. John's Wood. It differs from S. officinale variegatum in being of stronger growth, hardier, and in its leaves being edged with a broad margin of bright yellow; it also stands hot weather without becoming scorched. For shrubbery borders, or in isolated groups on lawns, this Comfrey will be an effective plant, its brightness vying with that of the Golden-leaved Elder.

Pulmonaria dahurica.—This rare little gem is now in flower with me. It is the smallest as well as the best of the Lungworts. Its leaves are oval-shaped, about 4 in. long, ½ in. wide, dark green, without spots, and beset on the surface with short, stiff hairs. The blossoms are borne on slender stalks about 6 in. high and are about ½ in. long, of a bright, clear blue colour, and they last a long time in good condition. It is one of the most difficult plants to manage in cultivation, hence its rarity. It does best in frames, for, though hardy, it does not succeed well if planted out-of-doors.—A.

Pitcher-plants at Holloway.—The large collection of Nepenthes in Mr. Williams' nursery is now very attractive. The plants, which are suspended from the roof of span-roofed houses, are furnished with a profusion of large, finely-coloured pitchers, which look all the more graceful for being allowed to droop down and intermix with the foliage of Cocos Weddelliana and fine-leaved Crotons.

The White Water Lily at Kensington.—The large round tanks in the Royal Horticultural Gardens at Kensington, filled with Nymphæa alba, are now very attractive. The plants grow here with remarkable vigour, and the blooms are much larger than we often find them in the open country. When the rose-coloured variety comes to be sufficiently plentiful to allow of plants of it being introduced among the white kind the effect will indeed be excellent.—S.

Amaryllis O'Brieni delicata.—This is now in flower in the Pine-apple Nurseries. It is one of the best Amaryllises ever raised. Its flowers, which are perfect in outline, are pure white, delicately traced, and dotted with clear rose. The foliage is dark green with a broad white band down each leaf. It is the result of a cross between a fine form of Hippeastrum pardinum roseum and Amaryllis reticulata major, and, when better known, it will doubtless hold a foremost place amongst Amaryllises.

Double Zinnias.—In mixed borders, or in beds among subtropical plants, these are always attractive when well grown. They require a deep loamy soil, and if other conditions are suitable they will bloom freely from July until the frost cuts them down in autumn. There is at the present time a fine collection in the Royal Horticultural Society's Gardens, at Chiswick; the flowers are as large as those of an Aster, perfect in form, and varying in colour, there being golden-yellow, magenta, rose, pink, purple, and cream colour. For cutting for vases they are invaluable, for, in addition to supplying so many colours, they last for a long time in water. The plants in question were raised from seed saved in Bengal, where the Zinnia is grown during the moist months of the year, namely, from May to September, thus teaching us that, in order to grow Zinnias well, a warm situation and abundance of water are necessary.—C. S.

Agapanthus umbellatus Out-of-doors.—Though this may not withstand the winter out-of-doors in many parts of England, yet good effects may be produced during the summer by planting out established specimens of it in spring. Either isolated on lawns or planted in borders or in mixed beds, good plants of it will produce abundance of flowers. During winter the plants should be lifted and stored in any dry shed free from frost. In this way they get a season of rest, and flower all the better when planted out the next year. Several large beds of this plant treated in this way are now in flower in the Tottenham Nurseries.

Mutisia decurrens.—Grown at the end of a glasshouse or on an open wall, this Mutisia, if planted in good soil, will make an attractive object during the summer. It is at present little grown in our gardens, although there is no reason why it should not be used in conjunction with the smaller-growing Nasturtiums or Convolvuluses, and similar plants for covering fences, walls, or bare stones on rockwork. Its bright Cinnamon-orange flowers are very showy, and will last in bloom for a considerable time. It is now flowering at the end of one of the glasshouses in the Pine-apple Nursery.—S. C.

Begonia Mrs. Arthur Potts.—This is a dwarf Begonia of the Davisi type, and is, indeed, probably a seedling from that kind. When in flower established plants are not more than 6 in. high, and their brilliant, blood-red blossoms are produced in great profusion. Either of these kinds make admirable plants for growing in pots or pans, or if planted out as an edging, or in groups in the conservatory, they would constitute a striking feature from June to November. They are now in fine condition in Messrs. Veitch's nursery, Chelsea.

Overcrowding Plants in Beds.—Among the mistakes made in "bedding out" a common one is putting plants close together that can only be seen to advantage when seen by themselves or at some distance apart. We have lately seen some beds of Begonias that were not effective because the kinds were such as could only be seen to advantage when the sides of the plants as well as the tips could be seen. Lately also, at the Paris Exhibition, we saw some fine collections of Gladioli so crowded together, that only the tips of the shoots could be seen. Numbers of plants will bear to be overcrowded without their beauty being wholly lost; and plants are easily divisable into two classes as regards their fitness for being placed close together. Those who have to deal with them would do well to more frequently consider their habits of growth in relation to the positions in which they are placed.

Exhibition Carnations.—At the Woodbridge flower show, usually held early in July, Carnations, Picotees, and Pinks are generally largely exhibited, and so distressingly formal in their paper collars, that one naturally turned to the Roses that had a few buds and leaves attached to them as a positive relief from such formalism and wasted skill. Amongst miscellaneous contributions at the same show I have, however, invariably stopped to admire a large flat basket of pot Carnations (principally of the tree section), a complete mass of the finest blooms, varying from fiery scarlet to the purest white, and as they were sent by Mr. Keen, the raiser of Miss Jolliffe, that lovely, free-flowering, flesh-coloured kind, I need scarcely say was largely shown. They were fine plants tied to single stakes, and allowed to mingle somewhat loosely together. No paper, except a slip for the name, was observable, and the pots were plunged and covered with Moss, like an ordinary nursery hamper of plants prepared for travelling. I merely offer this as a suggestion as to the possibility of those lovely flowers (Carnations, Picotees, and Pinks) being exhibited in a way which shows their beauty equally well as the single bloom system.—J. Groom.

Messrs. Rollisson's Failure.—A meeting of the creditors of Messrs. William Rollisson & Sons, of Tooting, was held last Tuesday at No. 8, Old Jewry, E.C., when a trustee was appointed. The meeting was largely attended, and at the close the chairman remarked that much sympathy had been evinced by the creditors present for Messrs. Rollisson, whose business is still being carried on, and it is confidently hoped that an arrangement may be arrived at whereby the uninterrupted continuance of the firm, which has now existed for nearly 100 years, will be ensured.

NOTES FROM KEW.

Hardy Trees and Shrubs.—Two kinds of Rhus, R. glabra, from North America, and R. semialata, from China, are among the most striking of the hardy ornamental shrubs for the present month. The first has elegant, pinnate leaves, composed of twenty or more leaflets, the general leaf-stalk, as well as the midribs of the leaflets, being a fine red colour; the beauty of the plant is still further enhanced by short, dense panicles of small, bright red fruits. R. semialata is a much larger sort, with noble leaves made up of from five to nine leaflets; the small, whitish flowers are borne in large panicles. Kœlreuteria paniculata is a handsome small tree from China; the foliage is very elegant, the leaflets being variously lobed, and the little flowers—yellow, with a small, orange-red centre—are so numerous as to make a tolerably good show in spite of their small size. Amongst shrubs remarkable for their handsome foliage, one of the best is Aristotelia Macqui variegata, a native of Chili; the variegation is most pleasing and constant. Provided a fairly-sheltered spot be chosen, the plant will do well—in the southern counties at any rate. Calycanthus occidentalis, a Californian shrub, also requires to be planted against a wall or amongst shrubs, as it is too tender to do well in the open in most localities; under favourable conditions, however, its large, handsome, deep brownish-red flowers—sometimes more than 3 in. across—are freely produced. Potentilla fruticosa floribunda is a charming dwarf shrub of good habit, and an extremely free flowerer, the yellow blossoms making a fine show.

Hardy Aquatic Plants.—A beautiful little Water Lily, Nymphæa pygmæa, deserves special mention; it has rather a wide geographical distribution, being found in Siberia, China, and on the Himalayas. The early part of the present century first saw it introduced to English gardens, and it was long ago figured in the "Botanical Magazine." For many years, however, it seems to have been totally lost to cultivation. Its little blossoms are pure white, not larger than a half-crown piece, and its leaves small in proportion; altogether, this is one of the most charming of all the smaller ornamental water plants. Another very interesting water plant, though somewhat less beautiful than the last named, is Hydropeltis peltata; the shape of its leaves has earned it the name of Water-Buckler. The floating, oval leaves are very pretty, and the flowers are of a purple colour. Its distribution, like that of the Water Lily mentioned above, is very interesting and peculiar. It has been found in the United States, Canada, the Himalayas, and Australia. Trapa natans, the Water Caltrops, growing with the two plants just noted, is doing better than we have before seen it in the open air; some of its leaves have assumed fine reddish and purplish tints which are especially attractive. Selliera radicans is a dwarf Australian plant of neat habit, bearing numerous whitish-pink blossoms singly on stalks 2 in. in length. The North American Cyperus vegetus, a fine plant 3 ft. high, is equally as pretty as many of the kinds that are thought worthy of cultivation in the greenhouse or stove; it is of a pleasing, Grass-green colour, and furnishes a colour and habit not possessed by any of our native plants.

Hardy Herbaceous Plants.—Cosmos bipinnatus, a Mexican annual, is perhaps the loveliest and most graceful of all the Composites at present in flower; the large blossoms exhibit various shades of purple, and the foliage is light and feathery; under good treatment. the plants attain a height of from 3 ft. to 5 ft.. The variegated form of Symphytum officinale is very striking on account of its large arching leaves broadly margined with cream colour. Rudbeckia speciosa, a United States perennial, is probably the most desirable member of a showy genus; it grows about 2 ft. high, and bears abundantly its handsome blossoms, the large ray being bright yellow and the disk a black-purple. A Michaelmas Daisy of very recent introduction, Aster tortifolius, will become a general favourite when more known; it has curiously cut leaves and showy blossoms of a pleasing mauve colour; its height is 1 ft. or rather more. Browallia demissa, a South American annual about 2 ft. high, has beautiful blue flowers. Calceolaria glutinosa, another very showy annual, grows about 18 in. high, and has bright yellow blossoms. Convolvulus Dorycnium, a South European plant with a very long flowering season, has charming pink flowers and narrow leaves; it is of shrubby habit, and grows about 1 ft. or 1½ ft. high. C. scammonia, the plant yielding the cathartic gum resin called scammony, is a fine decorative plant having long-stalked, arrow-head-like leaves, and long-stalked, white flowers borne in twos or threes. Lobelia ramosa, from the Swan River, in Australia, is an exceedingly showy annual, about 1 ft. high, the large flowers being a deep bright blue and having a white centre. Cuphea silenoides grows about 1 ft. high, and is covered with rose-coloured blossoms. Its variety of Zamperi is nearly double the height; the upper part of its large flowers is a black-purple, the lower being a dark crimson. Another variety, splendens, is about as tall as the type, but the flowers are of a dull, red-brown colour, the upper petals being edged with purple. Psoralea physodes, 8 ft. or 9 ft. in height, a North American perennial, is now in flower.—†.

THE LIBRARY.

A SCHOOL FLORA FOR THE USE OF ELEMENTARY BOTANICAL CLASSES.*

This handy little volume possesses many advantages over several works which have, of late, been published for the use of those who have mastered the elements of botanical science. In it the author has adopted the analytical method which Lamarck was the first to develop—a method which is, in our opinion, by far the best for enabling beginners to arrive at a correct conclusion concerning any (to them) unknown plant. Roughly stated, the arrangement consists in continually coupling together two opposite characters, and in deciding at each step which of these characters are exhibited by the plant under examination. Of course great care must be taken to ensure accuracy at each step, but, with a tolerable amount of diligence, any one who understands thoroughly the meanings of the more commonly-used botanical terms can run a plant down, as it were, and name it correctly without much trouble. This, of course, could hardly be done at all by beginners without such aid as that explained above. A good many woodcuts—some rather roughly executed, but all very characteristic—illustrate plants of interest, and also points of structure, far better than mere descriptions. The book contains also a small glossary, which explains shortly most of the terms used. Such terms, however, as dicoccous, tricoccous, &c., are, at the best, but clumsy expressions, and should not be used in any work like the one under review. Surely the Anglicised aril, too, is better than the more cumbrous arillus. We are told in the preface that, in the first instance, this work was compiled "for the use of the botanical classes of the Giggleswick school, and all the plants which grow within a few miles of that centre have, therefore, been included, whether rare or common; whilst in order that the book may be useful to schools in other parts of the country, all common plants have been included, whether growing there or not." Many widely distributed and common British plants are, however, omitted, and several which we cannot but think must occur within the limits, of which the author says he gives all the plants. The classification into common and uncommon plants by means of different type is, to say the least, somewhat misleading, many of our commonest plants being classed amongst the not generally common ones, and *vice versâ*. Many typographical errors occur, and some few mistakes in description, which a future edition—and the work is such as to warrant another—will, no doubt, set right. G.

BENTHAM'S HANDBOOK OF THE BRITISH FLORA.†

A new edition of this valuable handbook has just been published. The principal alteration in it seems to be the giving the first place to the Latin names of the genera and species. It was not without some misgiving on the part of the author, that, in the first edition, in deference to the strongly expressed opinion and advice of the late Professor Henslow, an attempt was made to establish an English scientific nomenclature in imitation of the French and German ones introduced in several standard Continental floras. The names were partly framed and almost entirely settled by Professor Henslow himself, and it was hoped that as his successful experience in the popular teaching of botany was fully recognised, they would have met with general acceptance. In this, however, the author has been disappointed, and, at the request of several friends, he has now restored to the Latin names their usual prominence, retaining the English ones only in a second rank. Four species are added in the present edition, Ranunculus ophioglossifolius, Teucrium Botrys, Juncus pygmæus, and Scirpus parvulus, all long known as French plants, but only recently ascertained to be growing within the limits of the British Islands.

Glanville's Wootton (Hatchards, Piccadilly) is a neatly got-up volume, consisting of 392 pages, devoted to the zoology and botany of that part of Dorsetshire. The botanical part, which most concerns us, is arranged in the form of a catalogue. Both Latin and English names are given, and they are placed under the different Natural Orders to which the plants belong. Photographic views of the Church and Manor House at Glanville's Wootton are given, and also an introduction describing the parochial history and archæology of the place. The work will be found useful for reference.

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* By W. Marshall Watts, D. Sc. (Lond.). London: Frederick Warne & Co Settle: Wildman & Son.

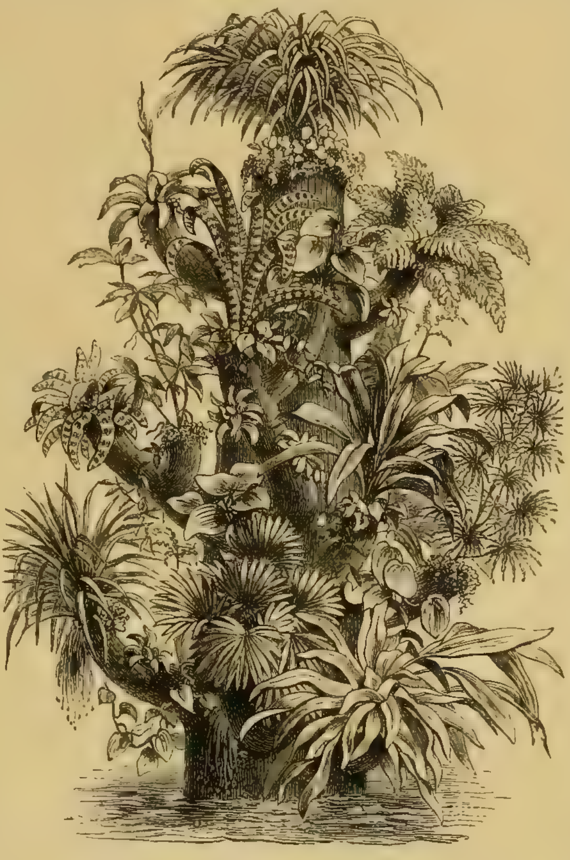
† "Handbook of the British Flora." By George Bentham, F.L.S. London: Reeve & Co.

THE INDOOR GARDEN.

ORNAMENTAL TREE STUMPS.

In a recent number of the "Revue Horticole" M. Carrière describes, under the above title, a method of utilising more or less decayed tree stumps by transforming them into picturesque objects for the decoration of the greenhouse or Fernery. Portions of the dead stump of almost any tree may be used for the purpose, those which have a large number of bold ramifications being the most suitable. In any case additional branches may be always added according to the place which the stump is to occupy, the new pieces being firmly secured to the parent stem by strong nails or, better still, by Oak pegs. Of course, in fixing the added branches, care must be taken to give the whole an irregular and rustic appearance, otherwise the artistic effect will be entirely marred. As the subjects to be placed on these ornamental tree stumps will require a constant supply of moisture, the stump must be surrounded with common Moss, Sphagnum, or some other substance which will maintain the whole arrangement in a continual state of humidity. If the plants used require a greater amount of nourishment than they can get out of damp Moss, a certain proportion of garden soil or well rotted manure should be added. The framework being put together, the next thing to do is to ornament it. Although the method of doing this must be left to the individual taste of the operator, nevertheless there are certain general rules to be observed in order to obtain as pleasing and picturesque an effect as possible. While avoiding monotonous regularity on the one hand, we must always proceed on some sort of system, so that a natural appearance may be given to the whole. The ornamental tree stump here shown is drawn from a beautiful specimen in a hothouse belonging to M. Worth at Turenne, and is the handiwork of M. Barré. As the form and dimensions of these ornamental tree stumps may be varied to a considerable extent, we can also exercise our choice in the description of plants to be used for ornamenting them; but here no fixed rule can be laid down, for everything depends upon the position which the ornamental tree stump is to occupy. Graceful variety should be the leading principle of the display, and the plants should be so arranged as to appear growing naturally. The following list will help beginners in selecting a proper collection, viz., Æchmea fulgens, Alocasia spectabilis, A. Lowi, Anthurium magnificum, A. Scherzerianum, Aralia Veitchi, Adiantum gracillimum, Bilbergia Leopoldi, Curculigo recurvata, Dracæna Baptisti, D. imperialis, D. umbraculifera, Eranthemum igneum, Fittonia Verschaffelti, Hechtia Jourvillei, Nidularium spectabile, N. latifolium, Pandanus pumila, Philodendron lucidum, Peperomia argentea, P. eburnea, Tillandsia sanguinolenta, T. Zahni, Vriesia splendens, &c. It is to be understood that the plants in the above list are not the only ones which may be used for the purpose, for almost any kind can be used, according to the opportunities of the grower and the place which the group is intended to occupy, but it must be borne in mind that certain classes of plants, such as the Ferns, the Aroids, and the Bromelias, lend themselves more particularly to this kind of decoration. Although these ornamental tree stumps are most frequently employed in the ornamentation of conservatories, they are quite as applicable for open-air decoration, especially in places where the surface of the ground is somewhat irregular, as, for instance, in the neighbourhood of rocky eminences, grottoes, near fountains, springs, and waterfalls, in the wild garden, in artificial bogs, everywhere, in fact, where the surroundings of the spot are calculated to harmonise with this mode of decoration. If the position chosen be a dry one, succulent plants, such as the Sedum and Sempervivum, may be used with advantage. Climbing plants, such as Ivy of different kinds, Delaireas, Periwinkles, and even wild Briers and Vines may be used. Plants with variegated foliage, such as the variegated Periwinkle and Grasses (Phalaris arundinacea picta) may likewise be chosen. It cannot, however, be repeated too often that there is no absolute rule in the matter. Most kinds of plants, both tender and hardy, may be used in this way.

C. W. Quin.



Ornamental Tree Stump (1-5th its natural size).

NEAPOLITAN VIOLETS.

Where Violets of this class are grown for winter flowering the time for transferring them from their summer to their winter quarters is close at hand. Presuming that the plants have been duly cared for during summer by copious waterings having been given them, and all runners having been cut off, they will now be sturdy plants with large, central crowns, good healthy foliage, and abundance of flower-buds. The position for the frames should be well sheltered from the north and east by a high wall or evergreen hedge. If quite open to the south, elevate the backs of the frames on temporary brick piers, so as to secure a steep incline, in order to catch every ray of sunlight and avoid drip. The surface will thus be dry, which is a great safeguard against damping off, which is very destructive when severe weather makes it necessary to close the frames for any length of time. The interior may be filled with dry leaves and stable manure trodden very firmly to insure a gentle, lasting warmth, allowing 1 ft. from the glass for plants and soil. Commence by putting a layer about 2 in. thick of good new loam over the manure, and on this set the plants, which should be lifted with the balls of soil entire by means of a steel fork. Thus treated, when replaced in the frame only some good, fine soil to fill the intervening spaces is needed, and no check whatever is experienced; a good soaking of tepid rain-water is then given them, when all is complete, and a mulching of Cocoa-nut fibre spread over the surface keeps the delicate flowers from being soiled while watering. The middle and end of September is the best season for transplanting, as the sun's rays are then sufficiently powerful to induce an active growth before the dull, dark days of winter set in. The flowers usually open in abundance during October, after which little water will be needed until the days begin to lengthen in spring. Damp is especially to be guarded against by continually admitting air when the atmosphere is above the freezing point, and by taking the lights off entirely on mild or bright sunny days. All decaying leaves should be carefully removed, and the surface soil should be stirred occasionally in order to preserve a sweet and healthy atmosphere. Only the fully-expanded blossoms should be gathered, and, if produced under the above conditions, they should be of a deep lavender-blue. Although a hardy plant, frost must be carefully excluded by closing the lights on the first indication of frost, and covering the glass with reed or other mats and dry litter. The sides of the frames should also be well protected with dry leaves, but on no account should the covering be left on an hour longer than is necessary in the morning. As soon as a thaw sets in remove the covering, and admit just sufficient air to provide a free circulation and sweeten the atmosphere. The glass should be kept scrupulously clean by washing it both inside and out, removing the sashes during the operation, and drying them before replacing them. As the days lengthen more moisture and air may be indulged in, and a good soaking of well-diluted manure and rain-water may be advantageously applied to assist the early spring flowers. Under the above treatment I have had abundance of flowers from October until the following April, when the plants will again be needed for division, in order to provide runners for the following year's supply of plants. J. Groom.

FEEDING AND DISBUDDING CHRYSANTHEMUMS.

Chrysanthemums that are grown as standards either for decorative purposes in large houses, or for furnishing flowers for exhibition, are greatly improved by frequent supplies of liquid manure from this time and onwards; indeed, the present is perhaps the most important period of the whole season of Chrysanthemum culture. In the first place, as to feeding, I would observe that the old-fashioned idea of feeding only after the buds are set has long been set aside by good growers, who have found out that if a plant be not grown with sufficient strength to swell and develop a large bud, it is a hopeless case to endeavour to expand it by giving the plant superabundant supplies of stimulating liquids in the last stages of its growth. I mention this as an important fact, but let there be no misunderstanding. The feeding of these plants even now is but very imperfectly understood, and the consequence is, that many collections are either sadly undergrown, or, what is perhaps a still more common occurrence, they are permanently injured by being over-watered with strong liquids given at long intervals, a system that cannot be at all commended as discreet practice. To be clear, therefore, an intermediate line must be drawn, and the composition in which the plants are growing must be taken into account, as must the time of potting and the size of the pot, as well as drainage. All this may seem collateral evidence, but in reality it is the very foundation upon which every cultivator must base his treatment if a satisfactory result be expected. It is safe practice to let every second or third watering be weak liquid manure specially prepared for the purpose, up to the time the flower-buds are formed, after which, the strength of the liquid may be considerably increased according to the capacity of the plant for taking it. As a rule, tanks that are the ordinary receptacles or reservoirs for all sorts of manurial liquids are not safe; nothing excels cow manure with a mixture of soot, which latter imparts to the leaves a deep green colour and a healthy tone to the plant. As a change, a mixture of pigeon manure may be used with advantage. Let the motto be "often, but weak," and mulch the surface of the pots with fresh horse or cow manure to encourage and stimulate surface roots. The disbudding of Chrysanthemums is, without, doubt, an important item in their cultivation. The feeding (although it takes precedence from a certain point of view) is actually of secondary importance, but both are at the same time inseparably connected where high cultivation is desired. First, you feed in order to secure a strong, vigorous plant, which will produce a large, well-developed bud; next, you select the proper bud according to the variety, and then the bud has to be supplied with the requisite nourishment to cause it to swell and develop itself into a perfect flower. The exact rule to be observed in disbudding can only be attained by careful observation and long experience. Chrysanthemums that are grown for the quality of their flowers alone are furnished with from one to three stems, according to circumstances. If the plant has not been pinched at any time during its growth, it will branch into three stems in July, and it may probably show a bud on the point of the main stem about the same time; this bud should be removed carefully, or if allowed to remain, the stem will branch into three shoots just the same. Generally speaking, most of the finest varieties of the incurved section will do best on the next bud that is formed on the point of each of these shoots, that is, of course, assuming that there has been no check to growth, and that the buds are neither too early, nor too late. I know of many instances this season where early propagated plants are giving some trouble in this respect. The remedy is of course to remove the bud, and allow the flower to be produced on the terminal shoot, because if this bud were taken, and the growth of the plant stopped, the probability is that the flower would be loose and unshapely, instead of being conical-shaped with broad deep petals of a self-incurving habit. In order to be clear I would further remark that the last days of August are early enough to risk stopping vigorous plants, especially varieties that have a tendency to be coarse, but are at the same time indispensable as show varieties, such as Alfred Salter, Lady St. Clair, Empress of India, and others of like habit. These are best grown on the terminal bud system, if the bud before alluded to (the crown terminal) should show itself before the very last days of the present month or early in September. When the latter bud is formed late it is by all means the one to secure, and if well treated will produce a very large flower. Where a bud shows itself, say the third week in August, and it is seemingly perfect in all its parts, it is a good plan to retain the bud, but in stopping the plant only pinch off two of the breaks and allow the third to grow alongside the bud for a time. As the bud develops itself satisfactorily and requires that the natural vigour of the plant should flow into it, this shoot will of course be pinched away. Another very good plan is to work the process of disbudding on a sort of compromise principle by adopting the plan just alluded to with one shoot and taking the terminal bud of another, thus securing two chances on the same plant. It is also necessary in disbudding to keep in view as much as possible the individual characteristics of each variety, as, for instance, White Globe and Jardin des Plantes, both grand old varieties and well adapted for exhibition, are better taken somewhat early, so that there may be uniformity in the time of flowering if a stand of show flowers be required. Mistakes are made in disbudding (owing to an imperfect idea of the number of times a plant should break before the bud is taken) which need not occur if it be borne in mind that it is not the number of breaks on a plant that has anything to do with the quality of the flower, but catching the bud at the proper time. The disbudding of general collections is not as yet recognised beyond a very limited extent, and yet the quality of the flowers on bush-grown plants may be vastly improved by growing plants for grouping purposes on a limited number of stems and taking one flower each from a stem. I allude to private collections; those who grow flowers for market of course adopt the system of culture which pays them best.

The Japanese section is becoming more popular every year. The disbudding of the early varieties, which may be performed earlier than the incurved sorts—at all events standard kinds such as Elaine, Fair Maid of Guernsey, and Jane Salter—produces noble heads of bloom when the latter is reduced to from three to six flowers on a plant, and, grown on the crown terminal bud plan, Elaine (snowy-white) and Jane Salter (lilac) will bear gentle forcing, and may be had in bloom a fortnight before the general collection. W. Hinds.

Otterspool.

The White Roman Hyacinth.—For house decoration in small pots, or as flowers in a cut state for bouquets or otherwise, there is not a more useful plant than the white Roman Hyacinth. If potted now it comes into flower, with scarcely any forcing, during the dullest and darkest months of the year, and by keeping a reserve stock of it in cold frames and introducing a few pots of it into gentle heat at intervals of a week or so, a continuous supply may be maintained until the large-flowered varieties of Hyacinths come in plentifully. For indoor decoration three bulbs in 4-in. pots are very serviceable, but, if required for cutting, they may be brought forward just as well in pans or shallow boxes, and, if in light compost, they may be removed with roots intact for table decoration, epergnes, &c. —J. Groom.

Plumbago capensis as a Standard.—This well-known plant is grown as a standard about 4 ft. high in some of the Paris gardens. The flowers are freely produced, and the standards form good heads. Once seen, however, planted out in a cool house and draping a wall or pillar with its unrivalled sky-blue flowers, few will care to see it in any other way.—V

Culture of Bulbous Plants in Pots.—The finely-flowered plants of Vallota purpurea, shown at South Kensington on the 20th inst., confirm my experience that bulbs which have persistent roots do not like shifting. The plants in question were evidently old-established plants, left, offsets and all, undisturbed in a mass, and only shifted when they had got too large for their pots. If disturbed as little as possible, not only do they grow better, and are less apt to decay, but they flower more profusely and with greater certainty. This has been my experience for the last twenty years with large collections of Vallota, Amaryllis, Nerine, Veltheimia, Drimia, Crinum, Pancratium, Griffinia, Brunsvigia, Hæmanthus, Ornithogalum, and similar genera. When they are shifted it should be in spring when they are growing; if moved when in a partially dormant state, they are apt to lose part of their roots; water should be given with care at all times. The soil which I have found to suit them best is a light turfy loam, with a moderate admixture of sand. I always avoid manure, it being much safer to give a little manure water when the plants require it. When they are growing they should have plenty of air and light. I have also found that Antholyzas and Watsonias flower best when allowed to get pot-bound. I do not intend these remarks to apply to such plants as Lachenalias, Tritonias, or Ixias.—J. Croucher, *Sudbury House, Hammersmith.*

Storing Gloxinia Bulbs.—At this season, when many of the early-flowered Gloxinias are approaching a dormant condition, every precaution should be taken to ripen the bulbs off well by preserving the foliage in health as long as possible, giving them a light, airy position, and gradually reducing the supply of moisture, so that the leaves may fall off naturally, and not, as is too often the case, become withered up while green through lack of moisture, or by being excluded from the light while in a partially resting condition. I have preserved hundreds through several winters with the loss of scarcely 1 per cent. by packing them on a shelf in a dry shed where a steady temperature of from 50° to 55° could be maintained. By packing the largest specimens at the bottom of the tier, and filling in between each layer of pots with Moss, excessive dryness at the root was avoided, and when those for starting earliest were drawn out for potting, an empty pot of the same size as that withdrawn was inserted in the vacancy. By this means the young growths started strongly, and if the position became too hot as spring advanced for the latest batch they were removed to cooler quarters; for, although Gloxinias do not appear to be benefited by an extra long season of rest, they may be kept a long time in a partially dormant state by withholding the moisture and heat necessary for their full development. As seedlings are now, however, raised so easily with flowers of extra good quality that continue in bloom during the autumn months if sown early in the year, it is scarcely worth retarding old roots for a very late supply. In fact, except in the case of extra good named varieties, it is best to raise fresh plants to replace any that are getting overgrown, as plants of the second or third season's growth are preferable to older, although larger, bulbs.—J. Groom.

Eucharis amazonica.—Among stove bulbous plants most worthy of culture, this is of the first importance. Its flowers are hardly surpassed by those of our finest white-flowered Orchids, even those of the white Phalænopsis, while the Eucharis is infinitely easier to grow. There are few gardens without it, but the general complaint is that it does not flower, which is not to be wondered at, considering the starvation system of culture to which the plant is sometimes subjected. A native of the tropical valley of the Amazon, this plant requires heat and moisture and a good strong soil. If it be potted in the spring, and subjected to a high stove temperature, good foliage will be developed, and from July or August onwards flowers will be produced in abundance. But the bulbs in the same pot do not all flower at the same time; consequently, the plant should be kept in the same temperature until all have flowered, which they will do later in the season. We have known one pot containing perhaps a dozen bulbs continuing to throw up flower-spikes for perhaps two or three months. This habit of the plant has probably led some cultivators to believe that they have succeeded in flowering the Eucharis three or four times during the year. They move their plants, when done flowering, in the meantime back from the conservatory to the stove or propagating pit again, and a new crop of flowers is the result, but they are not from the same roots. The Eucharis, like other plants of the same nature, requires a season of growth before it can produce flowers, and it is not to be expected that fresh crops of flower can be produced from the same root every two months. The plant does not require potting every year, but when it is potted the strongest and largest bulbs should be selected and potted in good strong sandy loam and rotted manure; during growth the plants should have plenty of water, and should be shaded from strong sunshine.—J. S.

ACCLIMATISATION OF PALMS.

Plants differ greatly from animals in the closeness of their adaptation to meteorological and other conditions; hence, on the one hand, while in England we can have parrots, monkeys, lions, tigers, and other tropical and sub-tropical animals living at ease during winter, and even the polar bear looking quite at home during our hot summer months, we lose, on the other hand, the enjoyment of many beautiful wild flowers and magnificent forest trees which enliven the scenery and greatly enhance the pleasure of the traveller abroad. Who that has travelled much does not remember the pleasure, nay, the rapture which he felt as he neared his first foreign port—say Madeira, for instance—in beholding the luxuriant "feathery Palm trees rise," as Heber sang when he linked them together with other of our earthly conceptions of "the better land." They are undoubtedly the first objects which forcibly strike the wanderer, and enable him to realise that his dear old home is far behind, and that he is, indeed, in a distant land. There is nothing so thoroughly foreign to the eye, and few objects in Nature more attractive. The long-tailed Celestial, the almond-eyed "Jap," and the black-skinned negro have been long familiar in our streets, but the Palm stands out in broad relief as the first novelty which attracts attention abroad. Having lately spent some months in Shanghai, I have been led to these remarks by observing, during the present severe winter, how well the few Palm trees planted there have withstood the rigour of the climate, and was first forcibly struck with the subject when, one bitter cold morning, a friend called my attention to the almost anomalous condition of Nature, that the Palm trees were covered with snow; and very pretty objects they were. That the specimens planted along the Bund of Shanghai are as graceful as the lofty Cocoa-nut trees of Ceylon or the Sago Palm of Borneo I do not maintain; but they are well worthy of the attention of those interested in the acclimatisation of plants, for few things would add more to the beauty of our parks, or better set off a landscape than endogenous trees, of which our climate has, or is supposed to have, deprived us. Shanghai is situated on the Woosung river, about twelve miles above its junction with the mighty Yang-tze-Kiang; the country around is perfectly flat, and the soil alluvial. Although so far south as 31° N. lat., 20° below the south of England, the winter is rigorous, and altogether the climate bears a most remarkable contrast to places in the Western Hemisphere situated in nearly the same parallel of latitude, *e.g.*, Malta and Bermuda.

The following table shows the average mean monthly temperature of several years past:—

January	40° Fah.	July	83° Fah.
February . . .	42° „	August	83° „
March	50° „	September . . .	76° „
April	58° „	October. . . .	67° „
May	69° „	November . . .	55° „
June	76° „	December . . .	47° „

During the recent winter there has been at least ten days continuous skating, and the thermometer during the month of January was frequently below 20° Fah., or 12° below the freezing-point. During the last six months there has been an extreme range of 82°, *i.e.*, from 99° to 17°.—R. Nelson, R.N., in "Science Gossip."

Plants from Russia at the Paris Exhibition.—In front of the Russian building at the Paris Exhibition, a collection of Russian herbaceous and Alpine plants is planted out and thriving freely. The collection was sent by Dr. Regel, from St. Petersburg, and includes a good many species, rare, and even some new to our gardens.

Eryngium Bromeliæfolium.—This is one of the best of a highly ornamental class of hardy plants, having effective foliage and fine spikes of flowers. It also looks well in pots in a young state, the foliage being rigid and spiny, and, in the case of full-grown plants, about 2 ft. long. In a matured condition this plant has a good appearance on Grass and as a background plant in herbaceous borders.—J. Groom.

THE FRUIT GARDEN.

STRAWBERRY GROWING MADE EASY.

Unlike other kinds of fruit, the Strawberry soon wears itself out and requires renewal; one might, indeed, almost term it a biennial, for, in an ordinary way, Strawberry plants cannot be relied upon to bear well after the second year. It occasionally happens that a plantation will last much longer; but this only occurs in favourable soils, or where particular attention is paid to its culture. In the ordinary way of cultivation fresh plantations have to be made every year, or there comes a time when, through exhaustion or a dry season, the plants die off in the ensuing year, and there is little or no fruit. In places where forcing is carried on, hotbeds serve to keep up the stock of plants. They are planted early enough to bear a good crop the next year, and those who can manage in this way need not fear a dearth; but the amateur generally has no such resource, and he cannot be made to see the necessity of planting annually. I am also inclined to believe that the instructions usually given upon Strawberry culture often have a deterrent effect upon many. The deep trenching and heavy manuring, the planting out at wide distances apart, and the after care required are, though undoubtedly the proper way to insure first-class fruit, often rather more than one is either able or willing to undertake. In soils of an unfavourable character (and there are many such) a considerable amount of skill and experience is required to produce a crop. In order to obviate these drawbacks I propose here to describe a method of growing Strawberries which I have followed with good results, and which, although by no means new, is so sure and simple, that I have often wondered that it has not been more generally adopted. Choose a piece of ground and mark out a bed 4 ft. in width, the length to be optional; let this be dug over, turning in a little short manure. Select a day when the soil is rather dry, rake it level, and tread it firmly; the lighter the soil the harder it should be made. On this bed plant the runners in rows 9 in. apart and 6 in. asunder in the rows, planting firmly. The best and most expeditious method of planting is as follows: Mark the line upon the bed, running the spade along it, withdraw the line itself and set out the distances upon the mark thus made; then with a trowel cut out a piece of soil, lay the roots of the runner against the even part, fill in, and tread firmly. Thus set, no worms or frosts will move them in winter, and they will much better resist the summer's drought. In March they should be hoed between, and they should be kept clean during the growing season. If a mulch of short manure can be given them they will be benefited thereby, and they should produce a fair crop of well-swelled fruit. Beds thus made, if top-dressed annually, will last several years. Being thick together, the leaves shade the ground, consequently they do not parch up in hot weather; the fruit, too, does not fall on or lay upon the soil, and the bloom is not so liable to get cut by spring frosts as it otherwise would be. In fact, I have known beds of this description to bear well when the general crop was almost annihilated. The first and second season the runners should be kept cut off, and when the fruit is gathered, give a top-dressing of soot and a good watering. This will be nearly all the attention which they will require, as, being close together, it is not necessary to promote rank growth. The second year they will have become too thick, when every other plant should be taken out; these, if laid in for a time, will serve to make other beds, being somewhat superior to young runners. I have known beds thus managed to last and bear well for five or six years. The great point is to give them a fresh start when the fruit is gathered, and to keep them just thin enough to allow the crowns to mature. If the planting cannot be done in autumn, it may be deferred until spring, but it should be finished by March; in that case it is better to take up or procure the runners in autumn, and lay them in some leaf-mould; they will then be furnished with plenty of fibres. This kind of culture possesses several advantages, not the least of which is the facility with which the plants can be protected in spring, and again when the fruit is ripening; the fruit, too, is easily gathered without having to trample upon the foliage. One of the best kinds for this purpose is President, as it is robust and throws up its trusses well above the leaves; the berries, too, being firm, resist the wet better than most kinds. The time is now at hand when the ground should be prepared, and I would strongly recommend those who may have hitherto failed to grow good Strawberries to give the system just described a trial.

Byfleet, Surrey. J. Cornhill.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Grape Vines at Fulham.—One of the most noteworthy features in the Fulham Nurseries just now is a long Yew hedge covered with pot Vines, put out to ripen their canes. Their growth is remarkable, both as regards length and strength, and they are probably the best examples of pot Vines ever grown in the Fulham Nurseries.—C. S.

Pears in Cellars.—At a recent meeting of the French Société Centrale d'Horticulture, M. Fresgot, an amateur fruit grower, showed a number of Winter Bon Chrétien and Prévost Pears, and some of an unknown variety; also Canada Reinette and Reinette de Caux Apples. To judge by their outward appearance, these specimens were well preserved, but unfortunately the Pears had almost entirely lost their flavour. The Apples had not suffered so much in this respect, especially in the case of the Canada Reinette, which, nevertheless, had gone a little pasty. The Secretary of the Committee of Arboriculture remarked that the Prévost Pear, as a rule, kept very well, but that it was not a good table Pear, and was only to be recommended for pastry. As there had been a discussion on several former occasions on the method adopted by M. Fresgot for preserving his fruit, which consisted in keeping it in a well-ventilated cellar, M. Ferdinand Jamin said that it was a mistake to suppose that underground cellars were the best for preserving fruit. When kept underground Pears lost their flavour, although Apples kept well enough. As for Pears, they required a well-ventilated room on a level with the ground.—C. W. Quin.

Cherries in Rhenish Bavaria.—The village of Weissenheim has long been noted for its Cherry crops. This year the harvest has been most abundant, not less than 1,500,000 lb. of Cherries, valued at £9000, having been bought up, and despatched to England, Hamburg, Bremen, Berlin, Munich, and elsewhere. Doubts have occasionally been thrown upon the accuracy of statements relating to the Weissenheim fruit crops, but the following fact will tend to show that their abundance has not been exaggerated. In 1875 the inhabitants of a neighbouring village, being unable to come to terms with the directors of a contemplated railway as to the compensation to which they were entitled, agreed to refer their case to arbitration. From well-authenticated facts placed before them, the arbitrators valued single Cherry trees at £16, £24, and £36 apiece. One tree, indeed, was appraised at the large sum of £86. The secret is that in the villages at the foot of the hills which fringe the valley of the Rhine in this district late frosts are absolutely unknown. When the Cherry crop is ripe the schools are all closed for a fortnight, and young and old, big and little, set to work to get in the harvest. After the Cherries come Apricots, after Apricots Plums, then follow Pears, then Apples, and, lastly, wine of excellent quality fitly closes Pomona's long list of choice gifts of the season.

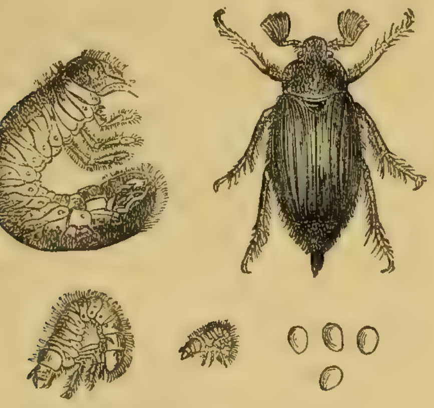
Fruit Trees Twice Transplanted.—Mr. Green, Clifton, New York, writes in "The Rural Home" in favour of fruit trees twice transplanted. With Apples, Pears, Cherries, Plums, &c., almost one year may be gained by planting the trees closely together, say 3 ft. apart, in trenches made with a plough, the spring previous to planting permanently. The reason that trees make such little growth the first season is not so much owing to their removal as to the loss of the larger part of their feeding roots. By planting the season before wanted, as above, a fine growth of new feeding roots will be formed, but not spreading far enough to prevent their removal entire without mutilation. Thus when permanently planted every one is almost certain to live, and will make a vigorous growth the first season. Nurserymen treat evergreens to several transplantings in order to secure fibrous roots, but I have never known the method to be extended to fruit trees. We have tested it on our grounds, and with very encouraging results; the fruit trees twice transplanted making almost as vigorous growth the first year permanently planted as those planted two years before in the ordinary way. Were the advantages of this method generally appreciated, there would be a demand on our nurserymen for fruit trees twice transplanted. But any planter can, by securing the trees a year in advance, avail himself of the advantages to be gained at a trifling expenditure. A few hundred trees 3 ft. apart in a row could be cultivated very economically as compared with their cultivation when planted over a whole field.

GARDEN DESTROYERS.

MELOLONTHA VULGARIS.

(THE COCKCHAFER, MAY-BUG, FERN SHAW BEETLE, OR BRACKEN CLOCK.)

When present in large numbers, cockchafers do an almost incredible amount of mischief to various trees by eating great quantities of their leaves, and even at times stripping them all off. They have been known to attack Beeches, Elms, Sycamores, Willows, Oaks, Cherry, Apple, Pear, and Nut trees, and Vines. Lime trees are said by Kollar to be free from their attacks, but Messrs. Kirby and Spence, in their "Introduction to Entomology," give the Lime among the trees on which they feed. The grubs will eat the roots of nearly all trees and plants, particularly those of Cherry, Plum, Pear, and Apricot trees, Rhododendrons, Azaleas, Roses, Strawberries, Lettuce, and Sorrel. The plants attacked by them soon droop and die. It is useless to search for the grubs at the roots of plants which are much withered, as the grubs have probably already left it and commenced their attacks on another. The best way is to look at the roots of a plant immediately it shows any signs of drooping. Some who have suffered much from their Strawberry plants being killed have found flowers of sulphur strewed on the ground and then dug in a very effectual method of keeping them away. One-tenth of gas liquor to nine-tenths of water, or strong salt and water, is very useful for watering Grass in the autumn when attacked by these grubs. Others have planted Lettuces and Sorrel (both of which plants the grubs are particularly fond of) to attract them from other plants. This insect fortunately has many natural enemies—rooks, jackdaws, blackbirds, thrushes, starlings, and many other birds; moles, field mice, pigs, and some beetles destroy large numbers of them.



The Cockchafer, in different stages of development.

The cockchafer belongs to the Natural Order Coleoptera, or sheath-winged, from two Greek words—*koleos*, a sheath, and *pteron*, a wing. The upper pair of wings form a sheath or covering for the lower ones. This well-known insect is about 1¼ in. long. The mouth, antennæ, wings-cases, legs, and upper part of the body are of a bright chestnut-brown. The eyes and the spines on the legs are black. The head and thorax are of a bronzy-green, so thickly covered with yellowish-white hairs that their colour is almost hidden. The wing-cases are covered with very fine white hairs or scales, which are very easily rubbed off. The under side of the body is of a dark olive-green, with an almost triangular white spot on either side of each segment. The body is not entirely covered by the wing-cases, but is produced beyond them into a long, deflexed cone, about 8 lines long. The forelegs are admirably formed for digging, being partially flattened and furnished with two strong spines. The antennæ have ten joints; the seven terminal ones in the male and the last six in the female form a large club, which can be opened like a fan at the will of the insect. The club of the male is considerably longer than that of the female.

The females lay their eggs in April and May at the bottom of a hole some 4 in. or 5 in. deep, which they make in the ground. The eggs are about the size of a Hemp seed, and of a yellowish colour. They seem to vary much in number, but probably less than fifty will seldom be found. The grubs are known by the name of white worms in England and of Connaught worms in Ireland. They are hatched in June or July; they have fourteen joints including the head; their bodies are much wrinkled and of a dirty white colour, with a bluish tinge in the terminal segments. They have three pairs of legs, one on each of the first three joints. The head and legs are of a yellowish-red. The insect in this state has no eyes. During the first summer and autumn the newly-hatched grubs keep together, and the damage they then do is inconsiderable. Before the frosts and rains of winter set in they burrow deeper in the ground and, having changed their skins, remain in a torpid state during the winter. They come nearer the surface in the spring, and then feed singly on the roots of nearly all herbaceous plants. When one year old they are about ½ in. long. At the approach of winter they again descend deeper into the earth, change their skins, and remain torpid; and on the approach of spring commence their depredations with renewed vigour, attacking the roots of fruit and forest trees as well as those of herbaceous plants. During the summer they attain the length of 1 in. At the end of autumn they again bury themselves out of harm's way from frost and rain, as in previous winters, changing their skins and remaining torpid until the return of spring, when they are nearly full-grown and about 1½ in. long and nearly ½ in. in diameter. In July they descend to a depth of 5 ft. or 6 ft., and, having made oval cells in the earth by the movements of their bodies, lined with a glutinous secretion from their mouths, they assume the chrysalis state, whilst in this condition the antennæ, legs, and wing-cases of the insect are easily seen through the thin, pale reddish skin of the chrysalis. They remain in this state until the next January or February, when they emerge as whitish, soft beetles, but in a few days become hard and of their mature colour. They still, however, remain underground until the middle of April or May, when they dig their way to the surface with the aid of their strong forelegs. The perfect insects do not live more than ten or twelve days; their flight is usually slow and awkward, and they seem unable to prevent themselves flying against anything in their way. They seldom fly about till evening, resting on the branches and under the leaves of trees during the daytime. S. G. S.

Lady-birds and Green Fly.—In the cultivation of Dahlias and Roses I have derived so much assistance from lady-birds, that I am desirous of saying a word or two in their favour. I am afraid that large numbers of the larvæ are destroyed owing to people not knowing what a vast amount of good they, as well as the fully developed beetles, are capable of effecting. At the present moment my Roses and Dahlias are being cleared of green fly by the larvæ of the lady-bird, which swarm upon the plants, and I have no fear as to the ultimate results. Some years ago, during the early part of the season, my Roses were so badly infested with green fly that the blooms had to be carefully cleansed with a brush and water before anything could be done with them; but in the course of the summer lady-birds and their larvæ so effectually cleared the plants that in the autumn there was not an aphis to be found.—George Rawlings, in "Gardeners' Magazine."

Home Travel.—The variety and richness of English landscape, the noble coast scenery of Yorkshire, Dorsetshire, Devonshire, and Cornwall, the lovely hills and lanes of Surrey, the Sussex downs, the mountains and lakes of Cumberland and Wales, of Scotland and Ireland, the literary and historical associations which make hallowed ground of so many spots in these islands—here are attractions which should suffice, and more than suffice, to satisfy the curiosity and to delight the eye of the traveller. And he has the satisfaction of feeling that they belong, as it were, to himself. As an Englishman, his own country claims his first regard, but its objects of beauty and interest lie so close to him that he is liable to forget their value. Many cultivated Americans put us to shame in this respect. England, the mother-land of the race, has for them an indescribable attraction. They are eager to visit a country hallowed by so many memories; to see the home of Shakespeare and the scenes immortalised by Scott; to visit our great seats of learning; to explore the ancient buildings and institutions which testify to the durability of English customs; to do homage to what is venerable in a past which belongs to them as well as to us. Even when, like Hawthorne, they exhibit some prejudice, their remarks betray affection for England as well as pride in her greatness; and it may be said with truth that some of the most enthusiastic descriptions of English scenery and of our stately homes and venerable cathedrals have been written by Americans. There is surely a moral in this fact for the tourist.—"Social Notes."

ROSES.

What Constitutes a Good Rose.

Botanists enumerate some eighty or more species of the Rose, while florists give us an almost innumerable number of varieties, of which but few are adapted for the general cultivator in any given soil and latitude. To enumerate the species and varieties does not come within our province, but it may be well to state a few of the leading characteristics of what most of us consider a fine Rose, whether species or variety. Excepting the Moss Rose, all varieties should possess foliage of a bright shining green, which colour, to be perfect, needs to be permanent, although not likely to be found in many varieties, my preference being for a sort of evergreen foliage. However size, form, &c., may vary in different varieties, uniformity in the same variety is desirable. A fine Rose is one which is rich and beautiful in all its stages of bud and blossom, up to, and previous to wide and full expansion. Single and double flowers, while enclosed within their calyxes, are alike beautiful up to a point where they expand to hide the calyx; but the double possess that characteristic which makes them magnificent when full blown, while the single are best shown previous to full expansion. Whatever difference there may be otherwise, the petals of all Roses should be thick, broad, and smooth at the edges. The bud and blossom should possess fragrance, and the higher that fragrance the more valuable the variety. The flower should be double to the centre, high on the crown, round in outline, with regularly disposed petals. The peculiar characteristics of any and all varieties should be strongly and fully developed in each flower.

Soil.

The proper soil for the Rose is a strong, rich, friable loam, well drained naturally or artificially, neither too moist nor too dry, but with such a degree of moisture that the plants will never suffer from want or excess. But we are commonly restricted to "Hobson's choice," and provided with soil, such as we are obliged to use, already made. Such being the case, we must supply any deficiency to the best of our ability. By aid of the present lights of science, and a little labour, we are enabled to largely modify and ameliorate almost any soil, often changing its entire character, and remedying defects in climate, &c. A fine Rose cannot be grown in uncongenial soil, therefore it is idle to expect it. If the soil be poor or ill adapted, the blossoms will be but imperfect, perhaps radically different from those grown in soil well adapted to bring out its strong points. Thorough drainage is essential, and where this is had there is little danger of having the soil too rich; and even when it may be thought sufficiently rich, the addition of a little well decomposed manure or compost will be advantageous. There is no fertiliser better adapted for the Rose than decayed turf from an old pasture—the older the pasture the better—mixed with old cow manure; and especially is this invaluable in pot culture, where the cow manure should be in excess of that needed in out-door culture. I have grown and blossomed Roses in clear cow manure, which has lain out and was gathered from pastures, and pulverised when dry, but I think a portion of soil, to give cohesiveness, is better. Recollect that the best of soil and careful attention is the price of successful Rose culture, and that the soil is just what we have the will to make it, when it is otherwise than an appropriate one for the Rose.

Manures for the Rose.

Roses are high livers and like food in plenty; a meagre diet will not answer the demands of a fine Rose. Of all animal manures that from the cow seems to be the best adapted to the wants of the Rose, but the manure, from whatever animal it may be, should be well rotted or decomposed, and be well incorporated in the soil. Thin turf, from an old pasture, well decayed and mixed with the manure, several times turned, is one of the best of Rose fertilisers; another good one is composed of one part Peruvian guano, three of decayed turf, and six of cow manure, all well mixed and made fine. The turf should be from some rich old pasture, just thick enough to embrace the main part of the grass roots. Pig manure, soot, and wood ashes are each and all good when composted or applied as top-dressing and well worked into the soil. All manures should be administered in allopathic, instead of homœopathic doses. Soapsuds are excellent fertilisers and renovators, applied to root and branch. Solutions of guano and other manures in water are excellent, and are generally best applied at night or just before rain. If applied to the roots at any other time the top soil should be removed, making a sort of basin around the stem, the liquid poured in and the soil returned; in this way no crust forms on the surface.

Planting the Rose.

Tender and half-hardy Roses, when planted in the open ground, should be planted only in spring; the hardy sorts may be planted either in spring or autumn, although I prefer spring planting. It should always be early spring or while they are dormant when the plants are set. Tea-scented and other tender sorts should not be planted out-doors until the danger of spring frosts is past. To plant a Rose properly the roots require the first attention; every bruised, ragged, or torn root should be cut off smoothly above the wound; tap or downward-growing roots should be shortened to discourage downward growing; cut back the top at least one-half, if not already done, in order to keep the balance. Have the holes dug sufficiently large to receive the roots when fully spread; loosen up the ground in the bottom, and mix in several inches of rich surface soil for the Rose to stand in and over. Place the plant in the centre of the hole, so that its collar will stand even with the level surface of the ground, unless it be a budded or grafted one, when it should be set deeper; then fill in the rich soil so that every root and branchlet of root shall be closely embedded therein; the soil should come in close contact with every portion of the root, for on this depends the success of planting. Moderate firming of the soil, only sufficient to hold the plant firmly, is all that is necessary, when the soil is in contact with the whole root. Unless the plant be of the dwarf sort, a stake should be firmly set and the plant tied to it. The mode of planting, whether singly in groups, or in beds, must be governed by the circumstances of the individual planter, but does not in any way affect the manner of setting in the ground. If planted in groups the taller-growing are best set in the centre, or in the background, grading downwards to the outside; if in rows they should be at proper distances, so that each shall form a specific object in itself, as well as a portion of the row. Planted singly on the lawn they form beautiful objects, and ought to be each distinct from the other, blooming at different periods; but where set in clumps or beds they make a greater show to blossom at the same time. The situation for planting Roses, especially the tall-growing sorts, should be one somewhat sheltered from strong winds, and the trellises or supports should be set out before planting, and be firmly fixed in the ground.

Pruning.

The pruning of out-door Roses is best performed in March or April, and must be in accordance with the habits and requirements of the particular variety. While some do best with only moderate pruning, others require to have one-half or two-thirds of the last season's growth removed; but with all pruning a well-shaped top should be kept in view; this can be attained by a combination of cutting and tying to position. The terminal bud at the cut should be left in the position which will most readily promote the growth of the desired form; for instance, if a more spreading form be desired, cut so as to leave the bud on the under or outer side; if a compact or upright head be sought, the reverse course should be pursued. Strong, healthy wood is always desirable, therefore in pruning cut out the weaker, reserving the strongest to make the new growth from. Always prune with a definite and fixed form or object in view. Vary the pruning with the requirements of the different varieties, and also for the positions they are to occupy, whether as standards, over pillars, flat trellises, walls, &c. If you desire quantity, regardless of quality in bloom, cut and disbud sparingly; but if quality is the first object, cut out all weak wood, and then cut away all wood of last year's growth down to one, or at most two eyes, and then you may go still further and cut out one-half of what is left. If with judicious pruning your Roses do not produce magnificent blossoms, you may conclude that there is something wrong or wanting in the soil, provided the season be an average one. Perhaps it needs some fertiliser added; rich loam or decayed turf mixed with its bulk of rotted manure, is better than clear manure and should be well worked into the soil around the roots; work it in in a circle equal to the circumference of the full spreading top. Budded Roses sometimes send out suckers or shoots from the stock; in planting such, it is well to set them with the junction of the stock and bud below the surface, so that the budded portion may form roots of its own, and thus become independent of the stock. Watch for any indication of suckering, and rub out all buds before growth is made.

Pot Culture.

If out-door culture of Roses is comparatively simple and easy, the culture in the house, conservatory, &c., is generally attended with many difficulties. For pot culture we select the tender or monthly classes, though with care some other sorts may be grown with moderate success. I shall confine myself to dwarf and tender varieties; and these must be selected with reference to the care, &c., which can be accorded them by the cultivator. And first, as to pots—these should be clean, free from mould, and large enough to correspond with the size of plant and roots to be grown in them. Potting soil should be composed of old pasture turf, loam, and rotted cow manure, in about equal proportions, or woods earth and sharp sand may be substituted for turf or loam—say one part of sand to three or four of leaf-mould, and the same of manure. Provide good drainage by placing potsherds or charcoal in the bottom, which should have a hole in it, and be raised a little from the saucer so as to allow the air to circulate; cover the drainage material with soil; then place the plant in the centre of the pot with the roots well spread; fill in among the roots with fine soil, using every care to bring the soil in contact with each root and every part thereof, firming it moderately, after which give it a gentle watering. If this potting be done before it is desirable to place the plants on the stand, the pots should be plunged out-doors in a somewhat sheltered position in sawdust, tan bark, or some like substance, to prevent drying out, there to remain till desired to place in the house or conservatory. When the plants are potted they should be pruned, as a general rule shortening in about one-half. As a general thing the temperature of our living rooms is subject to too great variations and the atmosphere is also generally too dry for successful cultivation of the Rose; to remedy these defects great care should be used in parlour culture to keep an equable temperature, with suitable ventilation, and then to frequently shower the plants. In the conservatory and greenhouse the temperature can be more equably maintained and we can in some measure remedy a dry atmosphere by evaporation of water, but we may fail by giving too much moisture, causing mould, &c.; good judgment and much experience are required to keep the temperature and atmosphere in just the right state, for doing which no arbitrary rule can be given. The soil of the pots must not be allowed to become dry or be sodden from too much wet; water well and thoroughly when water is given; dig up and stir the soil in the pots occasionally, as far as may be without disturbing the roots. Cut back the plants freely after blossoming, or, which is better, cut back blossom and stem as soon as they have matured. The stronger and more stocky the plant, the better it is able to support itself and produce fine, healthy blossoms. Use the greatest care not to allow the plants to become drawn, but give fertilisers in a liquid form freely. Study in culture to render it suitable to the plant and the object in view.

Propagation and Protection.

There are various methods of propagating and multiplying Roses; such as by seed, budding and grafting, and offsets or suckers. For budding and grafting, stocks of some hardy inferior kind are generally used. The mode of budding and grafting does not vary materially from the same process with other woody plants and trees, and need not here be described. Protection is advantageous even to those which are quite hardy, while it is essential to those less so. The Tea, Bengal, and Noisette classes may be left out during the winter by covering with sand or earth, but usually the top dies and new growth only comes from the roots. Evergreen boughs secured around the more hardy sorts are generally the only and best protection they need or can have; where the sorts need more protection, the plants may be laid flat on the ground and covered with sand or earth 1 in. or 2 in. deep.

Insect Enemies.

Whoever grows Roses, out-doors or in, and is not troubled with insects injuring foliage or blossom is a highly favoured and fortunate individual; for it seems of late that each plant and product from the soil has its peculiar insect enemies, which prove a drawback on our pleasure and a hindrance of our interests, to escape from which there is no patent or royal highway, but they must be firmly met and manfully fought. Still, where proper attention is given to soil, watering, planting, &c., and a few simple precautions and directions are heeded, little trouble or annoyance from insects need be anticipated. In house culture the aphis and red spider are the most formidable; for the first, fumigation with Tobacco, when it can be done, is the best thing, but if the aphis is any ways abundant the plants will need fumigating at least twice, a day or two intervening between the fumigations, to make sure of the destruction of all, young and old. Where the use of Tobacco is objectionable, 4 oz. of Quassia chips, boiled in four quarts of water ten minutes, with 4 oz. of soft soap dissolved in the liquid, and applied with a soft brush to every part, leaf and branch, of the plants will answer as a substitute; after fifteen or twenty minutes syringe the plants with pure water. Out-doors in May, or as soon as the leaves begin to grow, the Rose caterpillar begins to glue the leaves together, to form a shelter for itself. Go over the plants frequently and pinch these folded leaves, thus destroying the insect; this is the most simple and efficacious remedy, if it be a little revolting to the very fastidious. For the sawfly larvæ, and other later appearing insects, syringing with a solution of 4 oz. of whale oil soap in four gallons of soft water will usually destroy them; where this proves inefficacious, powdered white hellebore, sprinkled over the foliage while wet, will prove effectual; but let no one think that a single application of any one remedy is all that may be needed during one season, but be prepared to repeat whenever necessary. Rose-bugs or Rose-chafers are pests which often destroy the blossoms, their nature depriving us of the opportunity to attack them, except in the perfect state; and then we must destroy them by pinching their heads, stamping on them, and scalding; a little daily attention for five or six weeks will effectually dispose of them. Toads are fond of them and will dispose of large numbers when an opportunity is given them. Mildew sometimes attacks the Rose, and is usually caused by extremes of heat and cold, excessive and continued dampness, with continuous cloudy weather, too little bright sun and fresh pure air; sprinkling with sulphur and soot are remedies, but caution must be used not to give the sulphur too freely, or it will destroy the foliage. To sum up, I would only add that the whole culture is comprised in the seasonable, careful, judicious, and sensible application of the natural laws of cause and effect.—"Transactions of the Massachusetts Horticultural Society."

Roses and Mignonette.—These form an agreeable combination both when growing and flowering together, and also in a cut state, the only drawback being that the Mignonette, owing to its being a strong-rooting plant, not only robs the Roses of their due share of nourishment, but its top growth injures dwarf Roses by smothering their lower branches. My experience is, therefore, decidedly against employing Mignonette as a carpet plant for Rose beds. If Mignonette be particularly desired, it might be grown in the form of an edging outside the bed and quite clear of the Roses. There are, however, many plants that might be grown amongst Roses and that exhaust the soil less than Mignonette—as, for instance, bulbs of many kinds that do well when left undisturbed for years. I have had Rose beds beautifully edged with Crocuses and Snowdrops, while their centres contained Hyacinths and Tulips. These flower before the Roses have become effective, and, by planting Gladioli of various sorts thinly amongst them, we have had some beautiful spikes of bloom during the late summer months after the Roses had got over their principal blooming season. Where a good selection of the most continuous blooming Roses is grown to supply blooms in a cut state and for general decorative purposes, the second crop of blooms will be produced rapidly in succession by the first cut-back shoots; and some sorts, such as Gloire de Dijon and Celine Forestier, being even more perpetual, as regards their flowering properties, than those designated Perpetuals in catalogues, should always find a place in such collections. When Roses are grown in beds for decoration the dwarfs are most effective when pruned on the long-rod system, *i.e.*, by cutting out nearly all the old spur wood at the winter pruning and retaining and pegging down the strongest shoots of the preceding summer's growth.—J. Groom.

Utricularias in Glass Globes.—The exhaustive article on water plants, particularly those of our native waters, given in The Garden (p. 149) interested me very much, but perhaps one of the most beautiful, certainly the most singular, the Utricularias received only a passing notice. I have had the good fortune (a boon not often granted to botanists) of seeing it in full bloom in its native ditches, and large masses of this plant in flower is a sight not to be forgotten. Those who have seen the Vallisneria spiralis grown in glass globes may be interested to know that the Utricularias (whose leaves are studded with small, pellucid bladders) when grown in the same way as the Vallisneria, are equally beautiful, and, being natives, far more interesting. There are three recognised forms of this plant found in our waters, and probably two or three more awaiting to be discovered. To grow these plants in a glass globe, having obtained your plants, procure a sod of spongy turf about 3 in. or 4 in. thick of the same circumference as the bottom part of the globe. Make a small hollow in the centre of the sod, and fix the plant in it, making it firm with a little damp earth, introduce the sod with the plant into the globe, and fill it with water; the sod will soon be converted into mud, in which the plant delights. Utricularia minor is such a delicate small plant, that it may be grown in a Celery or finger glass.—T. Williams, *Ormskirk.*

Agapanthus umbellatus in Wigtonshire.—This has survived four winters in the open air here without protection, except a mat thrown over it in very severe weather. It is now in full flower, and the colour is much richer than when grown under glass. The flower-stems are somewhat shorter and stouter, and, altogether, the plant is rarely seen to such advantage under glass as it is in an open border. —Salmoniceps.

THE FLOWER GARDEN.

LILY CULTURE.

We have had a good deal of theory in The Garden lately; therefore, thinking you might like some good successful practice, I send you the following letter from Mr. Newall, an old friend of mine residing at Rochdale, and a good Lily grower:—

"There is so much discussion in The Garden upon Liliums, and on the modes in which they should be grown, that I have thought I would, after telling you my experience, ask your opinion respecting it. Remember our cold climate and the exposed situation of my bed (open alike to sun and wind) whilst you read the following letter: It is now sixteen years since the roots were first put into the soil, where you have seen them, and they have never been lifted since. The flowers may be a little smaller, very little, and the plants considerably dwarfed, but I consider that they are acclimatised, flowering earlier every year and requiring less care. Would this have been the case had I moved them? I think the L. speciosum (lancifolium) album, the one I am speaking of, more delicate than its brethren [sisters, too pretty for brethren] of the same class; it also out-of-doors flowers a little later than roseum, and much later than auratum or canadense. I protected my Lilies the first few years with straw, bark, tan, and shoddy, and in the spring with glass shades; now I only lay cinders and tan over the roots during the latter part of the winter and use no protection in spring, but I water and manure freely. This hot summer, with its drought, has done my plants no good, and, as the subsoil was clay, it was difficult to keep them from scorching; nevertheless, they are full of seed. Auratum, which has been out only one winter, is just bursting into flower, eight blooms being on a stem, and the L. speciosum will be in flower by the middle or end of next month. The flowers stand a frost that kills Dahlias. To give you an idea of their condition this summer, I may state that the number of stems in a round bed 1½ ft. in diameter was eighty-two, and five the average number of buds on a stem, some stems having seven, on some five, and on some of the young ones three. The stems are so tough and thick, that they require no sticks. In a more sheltered part of the garden, where they have been out about five years, they are taller, but no finer in flower. Would you, in my case, move them? I take as much soil off as I can every year and heap fresh soil on to them. I send you a piece of stem which encroached on the walk too far, and I put in a bud off it; but some of the buds are larger on the other stems. I have cut nearly 9 in. from the top. If you think it better I will remove them this autumn. Do you remember the long wall in the kitchen garden? I sowed its border broadcast with annuals, and put in Dahlias; it looks gay now and has given no trouble, as there was no room for weeds."

My friend's letter was merely intended to ask advice, but it tells such a tale of what intelligent, loving care will do with Liliums in a very awkward climate (near Rochdale), that I cannot keep it to myself. Lilium speciosum album, undisturbed for sixteen years, flourishing on an exposed situation would be a great feat even in the south. You will see by the enclosed stem that Mr. Newall's Lilies are in robust health. My advice was short—"Leave well alone."

Heatherbank, Weybridge Heath. George F. Wilson.

Orchis latifolia.—Dr. Moore (see p. 25) seems inclined to doubt Mr. C. W. Dod's estimate of the size of inflorescence attained by this beautiful flower in cultivation. Although I have not measured any equal to Mr. Dod's, "with flower-heads fully 1 ft. long," I have no doubt that, under favourable conditions, it would attain to that size. At all events, Dr. Moore's observation of a "rachis from 2 in. to 4 in. long" is, with all respect to so high an authority, very much under the mark. I recently measured the spikes of a plant in my garden, and found that out of eleven spikes the inflorescence of four spikes measured each between 7 in. and 8 in. As a garden plant I think it is superior to O. foliosa, as the markings on the petals give the spike a richness which is lacking in the exotic species. Miss F. Hope, of Wardie, showed me a variety of O. latifolia, called the Kilmarnock Orchis, which bore very large spikes; it would be interesting if she would favour us with the measurement of the spikes. A very good succession to O. latifolia is obtained by planting beside it that singular Composite Liatris spicata, the flower-spikes of which closely resemble at a little distance those of an Orchis.—Salmoniceps.

Spiræa Filipendula.—This is a charming plant for mixed or herbaceous borders, as, in addition to its elegant, creamy-white corymbs of flowers, it has a neat, Fern-like appearance, even when not in bloom. This is important, for, no matter how gay the flowers of a plant may be, if, when they go off, they leave unsightly vacancies, it is liable to bring herbaceous plants into disrepute.—James Groom.

PLATE CXLIII.

DAPHNE BLAGAYANA.

This Daphne is not only new to horticulturists, but also relatively new to botanists. It was first discovered in 1837 by Count Blagay, on his estate at Lorenzberg, not far from Laibach, in Carniola; and it was named in honour of its discoverer. A coloured figure of it was shortly afterwards published in Reichenbach's "Flora Germanica," but it is only quite recently that it has found its way into the gardens of Western Europe. It has also been found near Gratz, in Styria. As a garden plant it is still on trial. The figure opposite, taken from a plant which flowered in the Royal Botanic Gardens, Kew, represents it of natural size and stature. Like most of its congeners, it loves shade, and it grows naturally in rocky places. Its flowers are produced in May in its native country, but they will probably appear earlier with us.

The lovely Anemone associated with it in our plate is a native of the Taurus Mountains. In general character it closely approaches the more familiar A. apennina, from which it differs in its dwarfer habit and in the principal divisions of the leaf being sessile instead of stalked, &c. W. B. Hemsley.

STOCKS AND THEIR CULTURE.*

The varieties of Stocks which we cultivate are the Warriston, Intermediate, East Lothian (purple, crimson, and white), and Young's Newington Scarlet. With the exception of the last-named, we sow the last week in May in a moderately rich soil on an open, airy border. The plants are taken from the seed-bed about the middle of August and put where they are intended to flower or run out in nursery lines from 4 in. to 5 in. apart. If the latter mode be adopted select a clear, open space where the drainage is good, and after digging deeply stir into the surface a small quantity of half-decayed vegetable matter. On this the young fibres will lay hold, and when transplanted to their flowering lines or beds, which should be done the last week in February, or as soon after that as the weather will permit, they will lift with good balls. These plants will begin to flower in June; many, however, do not flower the first year, and if convenient to leave such standing they will, if double, furnish the finest flowers, and if single they will produce the best seed. I can discover little difference between the Warriston and East Lothian crimson in plants that flower the first season, but old plants of the latter variety clearly distinguish themselves, the fine, clear eye and bright crimson colour coming out distinctly. Soil and situation have, however, much to do with shades of colour. Young's Newington Scarlet is well suited for pot culture, and, as it sets for flower much sooner than the others, it should not be sown earlier than July 15, and should be transplanted from the seed bed in September, putting two into a 4-in. pot. Use turfy loam and leaf-mould, adding a small quantity of peat and sand. If planted out, treat as directed for the other varieties, placing all in a position where shelter can be given during severe weather. An old pit or frame or a few rough boards, on which a sash could be laid, will suit, but be careful that light and air can be given freely on every favourable opportunity, as nothing is more destructive to young stocks than damp. Those in pots should be shifted from 4-in. to 6-in. ones early in March, plunged outside, and removed to the house when they show flower. When the plants come into blossom select those from which it is desirable that seed should be saved, and pull up useless ones. The ripening process may be hastened by nipping the points off the shoots after the lower seed-pods are formed. When ripe pull up the plants entirely, and hang them up in a cool, dry shed, a position in which they should be left until wanted for sowing.

Tall Foxgloves.—When I read "B.'s" note (p. 177) respecting the tall Foxglove near Milford Haven, I measured the tallest stem of an unusually luxuriant group in a bed of Rhododendrons here. It only measured 9½ ft., thus falling short of "B.'s" by 2 ft.—Salmoniceps.

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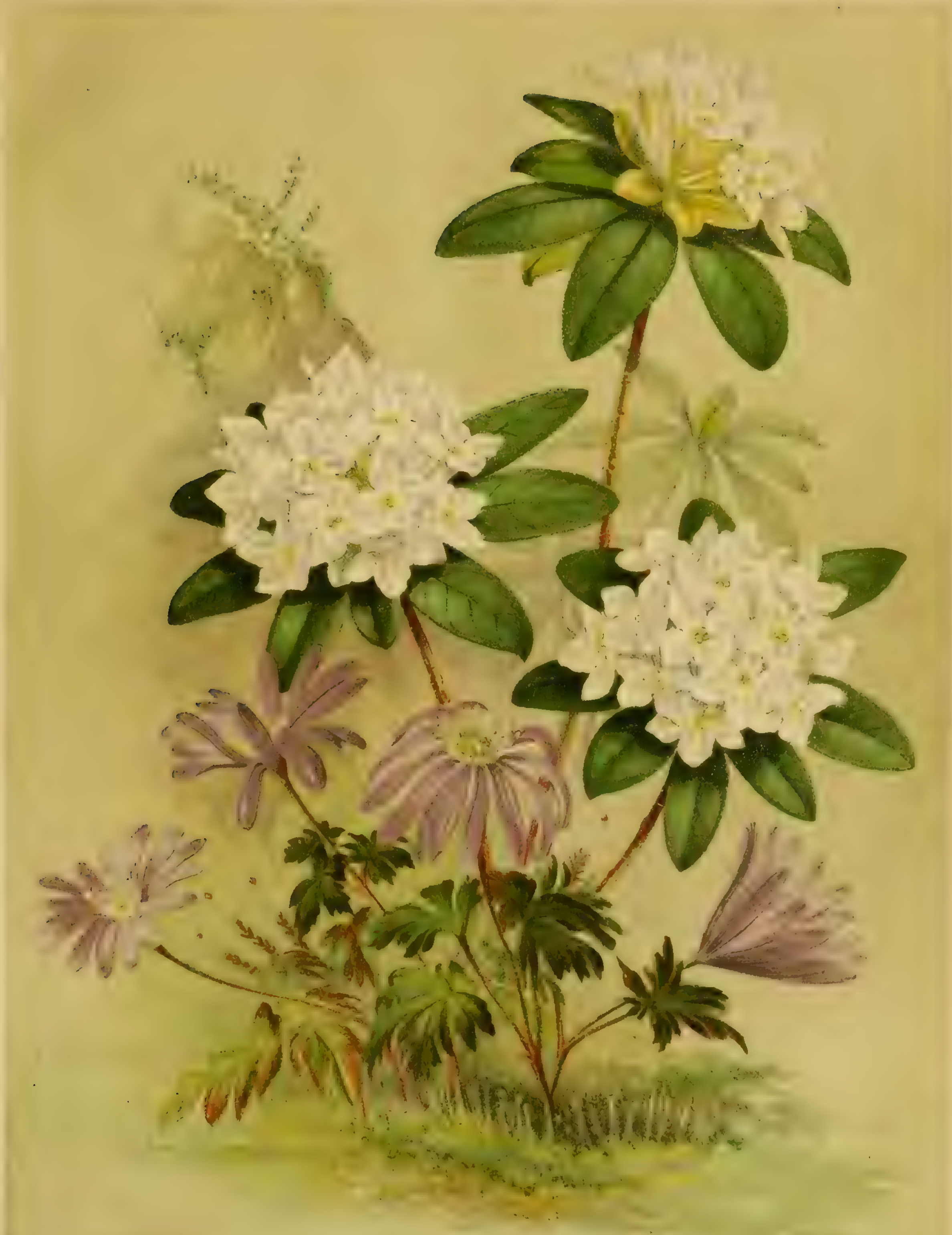
* Paper read by Mr. William Black, Dean Cemetery, Edinburgh, at a recent meeting of the Scottish Gardeners' Association.



A NEW DAPHNE (D. BLAGAYANA.)
THE BLUE WINTER ANEMONE (A. BLANDA)

PROPAGATING.

Cobæa scandens variegata.—This is rather a difficult plant to increase, and therefore requires to be skilfully managed. The best method of treating it is to take single 2½-in. pots and to fill them with peat and loam, finely sifted, and one-half silver sand; a little sand should also be put on the top; no crocks need be used at the bottom, only about ½ in. of siftings. The cuttings should be made of half-ripened wood, the soft tops and hard wood being useless. They may either be single eyes, as shown in fig. 1, or double, as illustrated in fig. 2. When the cuttings are inserted, give them a good watering and plunge the pots half way up in the cutting box on bottom-heat. The glasses or lights must be quite close, but a little air may be given for an hour after the first three days. They must be shaded with papers during sunshine, as they very soon flag, and when that happens it is a hard matter to get them up again without too much moisture, which rots the yellow parts of the leaves. Cuttings of this Cobæa may be put in all the year round, but if inserted in April they will emit roots in about three weeks. When they begin to grow, take them out, and if roots be showing themselves through the bottoms of the pots unplunge them, but still leave them on bottom-heat for a few days. If attended to properly in this way success is certain. Layering is another plan by which this Cobæa may be increased and by which larger plants may be obtained quicker than by means of cuttings. A strong plant planted out will make good growth the first year, and during the second it will grow rapidly; take 3-in. pots, fill them three parts full of soil; prepare the layers, and peg them down, as represented by fig. 3, with two pegs, covering them over with fine sandy soil, and watering them with a fine-rosed watering-pot. They are generally ready to cut off in about a month or five weeks after layering, according to the season.

H. H.

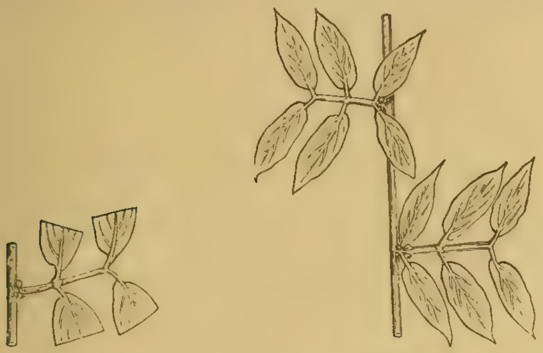


Fig. 1. Fig. 2.

Cuttings of Cobæa scandens variegata.

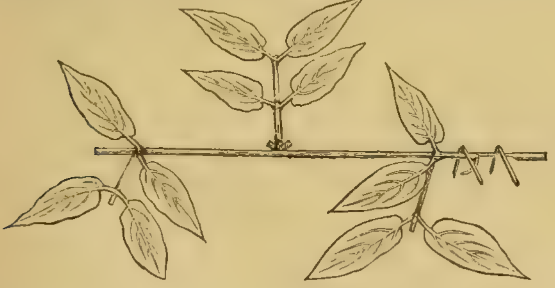


Fig. 3.—Layer of Cobæa scandens variegata.

PROPAGATING IN WINTER.

From the beginning of November up to the middle of February is a dull time for all employed or interested in plant culture under glass. During that period operations consist mainly in just keeping in health and preserving from injury those kinds of plants which require the protection of a glass roof. More may, however, be done at this time of the year than is generally attempted—much, indeed, that must otherwise be deferred until later in the season, when press of work renders its accomplishment difficult. It is possible to do much, both in propagating and preparing for it, which will considerably lessen that kind of work in early spring. Where a miscellaneous collection of plants has to be kept up, and especially if any quantity of decorative plants be necessary, a propagating house is indispensable; for although propagation may be carried on in stoves and temperate houses, there is seldom that success to be obtained which will be the case in a house devoted wholly to propagating. A span-roofed house is undoubtedly the best form of structure for propagating purposes, as it admits more light than a lean-to one, although the latter has the advantage of being warmer, which, to many to whom the expense of fuel is an object, is no slight recommendation. In any case the roof should be as near the surface of the ground as possible; the deeper the pathway can be sunk the less fuel will be required; and this, apart from economic motives, is a desideratum, as the more fire-heat employed the greater is the difficulty to maintain the atmospheric humidity which is indispensable in these structures; it is easier, too, to cover up when thus constructed. As to size, that will have to be regulated by the requirements of the place, but a house 20 ft. long and 10 ft. wide will suffice for a tolerably large establishment. Supposing a lean-to form of house to be adopted, which, in the majority of cases, would probably be found more convenient to erect, the interior space might be thus disposed: A brick pit should be built along the front 4 ft. in width; of this the half should be covered with slates and supplied with bottom-heat by means of a flow and return hot-water pipe, fitted with a valve in order to allow of the admission of heat when desired; the remaining portion of the pit should be used as a tan bed. The back part should be fitted with a stage on which to place the plants required for propagation and for other purposes. Thus arranged, there will be found ample convenience for striking, potting, and hardening off. Upon that part which is supplied with bottom-heat the greater portion of the winter propagation will have to be carried on. This may be done either under small frames, cloches, or hand-lights. November and December are good months in which to propagate many fine-foliaged plants, such as Aralias, Ficuses, and Dracænas, as they get well rooted and ready to shift by the time the growing season has arrived. The cuttings may be inserted in suitable soil, in single pots, plunged up to the rims in Cocoa-nut fibre. Plants of Dracænas that have been standing some time in pots will have formed strong tap-roots, which may be cut away and divided into small pieces. Where there is any length of bare stem, that, too, may be divided into pieces containing about two eyes; the top, being inserted, will also strike root readily. As these cuttings root they should be removed from the glasses, and in the course of a fortnight they will be ready to shift into larger pots. If they are then plunged in the tan bed for a time they will quickly get established, and may be removed to other quarters. Plants started thus early into growth naturally make much larger and handsomer subjects than when propagation is deferred until spring. If good specimens of Fuchsias and double Petunias be desired, young plants must be obtained and started into growth early in the season. In the beginning of December some plants should be placed in warmth, which will furnish cuttings by February. Each cutting should be inserted in a small pot in a very light and free compost. As they root remove them, and shift them before they get pot-bound. When established they will have to be placed where they can be grown quickly. Handsome specimens may be thus obtained, one of which for conservatory decoration is worth a dozen small, indifferently-grown plants. There are many plants which may be propagated about this time of year, and which may be cleared out before the busy season arrives. Choice kinds of Pansies, which have been potted in the autumn and kept in cold frames, will strike readily at this time, and will, if looked well after, either make thrifty plants for bed or border work, or they may be employed for further propagation. Carnations should be struck as early as possible in the year; they require a long season in which to make good growth and to set their bloom. Maiden hair Ferns may be divided into small pieces, and by beginning thus early they will grow into good plants by the end of the season: Cyclamens raised in the autumn may also be potted off, or seed may be sown; and soft-wooded Heaths may be put in, and plunged in the tan bed, and covered with bell-glasses. There is, in fact, a great amount of work of this description which may be accomplished if a suitable place can be provided for the purpose. J. Cornhill:

GARDENING FOR THE WEEK.

Flower Garden.

Culture of Pansies in Beds.—Amongst hardy border flowers few are more generally grown or appreciated than the Pansy. It is one of those flowers that require but little attention, but, as it will grow almost anywhere, even the small amount of care required to bring it to the highest point of perfection is not always bestowed upon it. A bed of seedling Pansies is easily obtained, and if the seeds be saved from good flowers, the mass of bloom, so beautifully diversified, has a charming effect. The first or second week in September is a good time either to sow seeds or put in cuttings of the named sorts. Those who have the convenience of glass-lights or hand-glasses, would do well to sow the seeds or plant the cuttings in shallow boxes or pans, and place them under glass; not that the seeds will not vegetate or the cuttings strike roots in the open ground, but they will do better under glass. In sowing the seeds I fill the pans nearly full of a compost consisting of loam, leaf-mould, and sand in about equal parts, the loam predominating a little; I make the surface quite level, then I sprinkle the seeds thinly over it, and just cover them with fine soil. The same compost answers well for cuttings, and these should be taken from the centre of the plants. The smallest growths strike roots most readily; the strong-flowering stems take a long time to form roots, and are seldom satisfactory. When the seedling Pansies are large enough to handle, I prick them out in fine sandy soil on a level surface, and I do the same with the young plants raised from cuttings; they are also planted out about 3 in. apart until they are well rooted, when they may be planted out in the beds or borders prepared for them. The Pansy likes a cool soil and climate, and though our garden soil is very light and sandy, on a gravelly subsoil, and the air is hot and dry, we grow Pansies very successfully. This last season I had a bed of them 60 ft. long and 3 ft. wide, which has lasted in flower since March, and which will continue, if it be left alone, in good condition until frost comes. The preparation of the ground for this bed was done in September. It was trenched 2 ft. deep and well manured with cow manure, the best for this purpose. The surface of the bed was also lightly forked over two or three times when it was dry, and I was also able to place some fine virgin loam on the surface before planting. All the attention required after this was merely keeping the ground free from weeds and occasionally stirring the surface. Many may be inclined to think that this is a great deal of trouble to take with such a flower as the Pansy or Heartsease, but those who are really fond of flowers will take a pleasure in doing all they can in order to attain success. Pansies produce flowers in succession, and so freely that they will ultimately come quite out of character. As soon, however, as it is perceived that the flowers are deteriorating by the belting becoming imperfect nearly all the blooms should be pinched off, and the shoots should be pegged down close to the surface of the ground, having previously placed some rotten manure on the surface, and, if the weather be dry, give a good soaking of water. The next flowers produced after this will be of good quality. This same operation must be performed as often as it is necessary, and the result will be good blooms all through the season. When it is intended to exhibit Pansies the shoots should be thinned out to about five or six, and all the flowers should be removed two weeks before the show.

Culture of Pansies in Pots.—The Pansy succeeds so well out-of-doors that it almost seems superfluous to grow it in pots; the only object in doing so is to have the flowers earlier, and also to protect them from the rough weather experienced early in the year. The cuttings for plants in pots should be taken earlier than in the case of outdoor plants, say the first week in August, and they should be propagated in the same way. When rooted they must be potted in small pots, and they should be placed near the glass in a cold frame; when the little plants have quite filled their pots with roots, repot them into 4-in. ones, and by the middle of October they may have their final shift into 6-in. or 7-in. pots, according to the strength of the plants. In all stages of their growth the plants should be quite near the glass in the cold frames; the lights should be removed when the weather is fine, or when rain is falling gently, but they must be protected from heavy thunder showers. Green fly attacks the plants when grown under glass, and would seriously injure them if it were not at once destroyed. I prefer fumigating with Tobacco smoke, and the lights must be kept quite close when the operation is being performed. It is best not to fill the frame too full of smoke; on the contrary, rather fumigate on three successive evenings at intervals of three days. If the frame be placed in a sunny position, the plants will commence to flower early in February if the weather be mild; of course, they will make no progress during frosty weather; they will continue to produce flowers until the end of April, when those out-of-doors will succeed them. The potting material should be good turfy loam, four parts; leaf-mould, one part; rotten cow manure, one part; with some sharp sand added if necessary. Weak liquid manure should be applied when the first flowers open, if the pots be well filled with roots.—J. Douglas.

Mixed Flower Beds.—Go over the beds and regulate the plants so as to give them an orderly look. It is well now to go over the flower garden, note-book in hand, making an entry of the plants that do best and those that fail, as also to determine what changes are to be made next year, not only as regards alteration in the arrangement of colour, but also in form; the latter of which we hold to be of even greater importance than the former, for, by a judicious use of a few taller-growing, elegant-habited plants, to relieve the generally too evenness of surface of the greater portion of summer bedding plants, a great deal of what is objectionable that exists in this style of gardening can be avoided. For instance, if such plants as Humea elegans, Acacia lophantha, Grevillea robusta, and many others of slender open habit, are sparingly used in the beds they relieve the even surface without hiding to any appreciable extent the colours of the principal occupants. The effect that such plants used in this way would have, can, at this season, when the beds are full and at their best, be better judged than at the time of planting. Carpet beds might cease to bear too close a resemblance to carpets if the arrangement was a little more varied in surface, and would be none the worse for the modification. Whatever alteration is to be made in the ensuing season in these matters can only be adequately provided for by being determined upon at the present time, so as to admit of the necessary propagation of the plants required. Wallflowers, Foxgloves, Sweet Williams, Dianthus, and other plants of similar nature, that were sown earlier in the summer, will now be ready for transplanting from the seed-bed. Choose for them an open situation, the soil of which should be light, so that when in the spring they are removed to their flowering quarters, this can be done without so much injury to the roots as when grown in adhesive ground. For everything of this kind the soil must not be too rich, as over-luxuriance should be avoided in all that can be injured by a severe winter. Put in the plants at a distance of 8 in. or 10 in. apart; if they are too much crowded they get drawn, and are correspondingly weak.

Moving Shrubs.—It is not uncommon to see shrubs which at first, when small, were planted close to give immediate effect, with a view to some being thinned out as they got larger, left until they spoil each other. If, in the first instance, the work were done with judgment, those which were intended to remain permanently will have been put in such position as will afford them enough room by simply moving the others of less value, which were only put in to fill up for a time; but it frequently happens that this course has not been followed, and that the planting has been done indiscriminately, in which case when they are grown so as to be too close, a portion has to be taken out, and many required to remain want moving more or less from the position in which they were first planted. Where removal of this kind becomes necessary, it should be carried out before the shrubs have grown into such a crowded state as to injure the whole, as frequently permitted; for, independent of the injury inflicted upon all, the longer moving is deferred, the worse condition they individually get into for removal. There is no time in the year when evergreens can be more successfully transplanted than from the end of August to the beginning of October; but the earlier in September the better; there is no necessity to wait for showery weather, not even if the soil be apparently so dry as to contain little moisture. In fact, the heat that is in it when in this state is one of the first requisites as regards success, on account of its assisting to promote the immediate formation of roots; whereas, if removed late in autumn, when the temperature of both the air and earth is reduced by waning sun-heat and chilling rains, all this advantage is lost. In planting, however, whilst the soil is in the dry condition above described, it is imperative that every plant should be thoroughly soaked with water when it is replanted. This should not be done by half measures; on the contrary, the whole of the soil that is put in round the roots down to the bottom of the hole should be effectually moistened. Where this is done the formation of new roots, as I have said, commences immediately, and this single thorough watering will generally be found sufficient. If any doubts be entertained as to roots being formed immediately after planting at this season, an inspection, say a month afterwards, will soon dispel them; for those who will take the trouble to look at the point of every root that has been severed will observe a quantity of young feeding fibres which will enable the plant to resist the most severe winter that may ensue, and ready to supply the demands made by spring growth. Each shrub, as soon as it is taken up, should be immediately replanted, not allowing the roots to have time to dry. In this there must be no delay; indeed, this early removal is only to be recommended where shrubs can immediately be placed in the new positions assigned to them from one part of the garden or pleasure ground to another. Presuming that the surplus plants thus taken up will be again planted where more space can be found for them, ground for them should be prepared beforehand by sufficiently deep digging or trenching, so as to expedite the work.

Indoor Plant Department.

East Indian Orchid House.—Those plants here that flowered early in the spring should by this time have made considerable growth, especially the earliest-bloomed Aerides, Phalænopsis, Angræcums, Vandas, and Saccolabiums, but must be still further encouraged to keep on for some time longer, as the species that do not form bulbs do not require near so long a rest as the others. Comparatively few of these will be flowering after this, excepting such as Aerides quinquevulnerum, A. suavissimum, and Saccolabium Blumei, the bloom-spikes of which by now, in many cases, will be near opening. Orchid flowers of this description now being scarce, it is well to preserve them as long as possible; for this reason whilst in bloom they should be placed at the coolest end of the house, or if, as in most places, where there is a considerable collection of these plants, there is a small compartment wherein to keep them whilst in bloom, they may be accommodated here, but they should not be so treated as to completely stop growth, as it is too soon for them yet to go to rest, and to put them whilst in flower where growth would be quite stagnated, and to excite them again afterwards into a second growth, would cause a derangement in the plants not advisable to bring about, as these transitions from growth to rest, and afterwards the inducement of second growth, frequently engender disease. Another fine late-blooming Orchid usually subject to East Indian house treatment is Oncidium Lanceanum. There are several varieties of this which rank amongst the most beautiful of all Oncidiums. The flowers are long, enduring, but liable to spot if in a moist atmosphere, particularly the charming light-coloured form. These also, like the foregoing plants, should be kept in a drier atmosphere whilst flowering. So far as the general requirements of the plants in this department go, especially such as flowered latest, which will be now in full growth, regulate the moisture in the atmosphere in accordance with the state of the weather. Nothing can be worse than an uniform system in keeping the atmosphere equally humid in dull, showery weather, as when it is bright and sunny, as, if the air is kept in an overmoist state, it has a much greater tendency to the production of undue elongation in the growth than even more warmth would have in bright weather, when the action of the sun quickly dries up the moisture and additional light corrects any disposition to a weakly, drawn-up condition of the foliage. The growth made early in the season is by this time more solidified, and the leaf formation now going on is not so soft and tender as that made in the spring; consequently, the plants are not nearly so liable to be injured by exposing them to a little sun early in the day and later on in the afternoons when it is not so powerful. The general tendency of the treatment I have found most conducive to continued healthy vigour is at all times to submit the plants to plenty of light and to gradually shade for a shorter period during the day, when it is required at all, as the autumn advances.

Dendrobiums.—Such plants of Dendrobium of the Wardianum, Devonianum, crassinode, and Pierardi section that bloomed earliest in the spring will be, by degrees, finishing up their growth; as soon as the terminal leaf at the extremity of the bulb is visible, they may be placed nearest where the air is admitted to the house and have a little less moisture given to them. This will keep the bulbs on assuming a state of maturity, and correct any inclination that there may be to push into second growth from the base, a condition that should by all means be avoided; but any treatment thus advised must not be carried to extremes, or it would have the effect of stopping the full development of the bulbs, upon which not only their ability to produce the full complement of flowers that may be looked for the ensuing season depends, but also the power of the plants to increase in size to the extent of which they are capable.

Mexican House.—The different species of Pleione will now be forming their bulbs. Give them every attention, so as to induce their plumping up to a large size, for with these most beautiful winter and spring-flowering plants, it is of the greatest consequence to grow them in a way to induce size and solidity, as upon this depends their ability to increase more than with most subjects.

Calanthes of the vestita section should receive plenty of water with abundance of light, so as to invigorate and solidify the bulbs now considerably advanced.

Cattleyas.—Of the late-flowering, two-leaved species, such as C. violacea, some plants will yet be in bloom or fast approaching that condition; they are amongst the longest livers in flower of the family, and as they bloom from the mature growth of the present season, they will receive no check or any injury from being kept whilst in flower in a much drier atmosphere than that in which they have been grown. The same holds good with the summer-blooming C. labiata pallida, another plant that is very useful from its disposition to flower in the autumn when Orchids are more sparely represented by blooming subjects than at any other time.

Imported Orchids.—Recently I gave some hints upon the management of imported Orchids requiring medium and cool treatment. I may now add a few words as to East Indian plants. They, in common with the cooler species, often suffer severely in transit, frequently to a much greater extent than such as are introduced from the Western Hemisphere, not alone from the longer time required in their reaching this country, but also from the fact that many of the species, such as Aerides, Vandas, Saccolabiums, and, most of all, Phalænopsis, from their growth being of a different character destitute of pseudo-bulbs, the latter of which enable the plants so formed to resist the adverse conditions to a much greater extent than plants in which these are absent. Through the early autumn months is the best time to receive them, as then they are not subject to the low temperature unavoidable on their approaching our shores in winter or spring, and which is so fatal to them. These likewise, as soon as they arrive, should have a thorough cleaning and be placed in an intermediate temperature for a time, imitating the conditions recommended for the cooler plants in so far as not subjecting them to treatment that will suddenly excite growth, yet they must not have near so much air admitted to the house or pit they occupy as advised for the less heat-requiring kinds; let the atmosphere be slightly humid, but not too moist, suspending the plants head downwards until their leaves have absorbed moisture so as to plump them up and their roots show signs of growth, after which they may at once be potted and gradually, but slowly, submitted to more warmth and moisture, to enable their making growth and becoming established. East Indian plants that form bulbs, such as the extensive family of Dendrobiums, are much easier managed, and, if they arrive in fair condition, will usually very soon commence growing; with them, as with the cooler, pseudo-bulb-forming species, it is not advisable to cut them in small bits previous to their commencing growth, but, on the other hand, to grow them on in good-sized pieces, in which way it only requires a very few years to induce their making full-sized bulbs, equal to, or larger than they have produced in their native country. One of the greatest essentials in Orchid culture generally, and more especially with newly-imported plants, is to be satisfied with a moderate extent of annual growth made under conditions that will impart to the plants during its formation a full amount of solidity, without which it is useless to expect their continuing long in health.—T. Baines.

Greenhouses.—As most greenhouse plants will now be out-of-doors maturing their growth, any houses needing repairs or painting should receive that attention, so as to be in readiness to receive the plants should wet or unfavourable weather set in. If this occur before the houses are fit for their reception, raise the pots from the floor of ashes or other bed on which they may be standing, and place them on a couple of bricks, so as to secure perfect drainage, and thus prevent a too great saturation of the soil. They will be in a safer position laid or tilted on their sides during a continuance of heavy rain than they otherwise would be. By excluding the wet from the balls in this way, the plants will be rather benefited than otherwise from the thorough cleansing which the tops will receive. On the other hand, when the weather is dry great care must be exercised to see that they do not suffer from want of water, as plants dry much faster when placed out-of-doors with a constant current of dry air circulating amongst the pots than they do when placed on the stage of a greenhouse. To ensure soaking them through, the first watering which they receive should only be preliminary, and as soon as that is soaked in repeat it once or twice, if thought necessary, as it cannot do the least harm, if no more be administered till the plant is in a fit state to receive it again. It is giving water in small quantities before it is really required that does the mischief, as then the soil becomes water-logged and sour, a condition fatal to all healthy root action. So long as plants remain out-of-doors, they should be freely syringed on the afternoons of fine days, a proceeding which tends to keep down red spider. Heaths, however, should prove an exception to the general syringing, as it is only a few of the free-growing, winter-blooming varieties which derive benefit from it, and even in their case it ought now to be discontinued. Many of these are subject to mildew, and any that show the least symptoms of it should at once be dusted with dry flowers of sulphur, which will quickly rid them of its presence.

Winter-flowering Carnations.—Where flowers are wanted at Christmas and early in spring these will require special attention. Stopping should be discontinued, but they should be cleaned, neatly staked, placed in a cool pit or house where plenty of air can be given them so as to encourage strong growth. Before placing them in the pit or house, however, it is advisable to top-dress them with some fresh loam, and to give them a good watering with soot water, or a weak solution of lime water, to drive the worms out of the pots. They will also require dusting occasionally with sulphur, as they are very subject to mildew and red spider, from both of which they often sustain injury. In sulphuring, Carnations require to be carefully gone over so as to distribute it regularly in their stems, and, after it has been on three days, wash it off with the syringe and clear the foliage of all dirt or sulphur. After the plants have commenced to grow moisten with weak guano water or Standen's manure about once a fortnight. Keep them neatly tied up, but not so closely as to prevent the air from circulating among the shoots, for, when bunched up to the stakes with one tie mildew and green fly often do considerable damage before they are noticed; the pores of the leaves and shoots get gummed up and the plants lose their vigorous appearance. In the case of large plants at least three or four stakes should be used. If the plants are well looked after they should commence flowering in November and continue till March, and old plants will furnish plenty of autumn bloom.

Indoor Fruit Department.

Vines.—Now is the best time to cover outside borders attached to Vineries in which Grapes are intended to hang during the greater part of the winter; when delayed until further on in the season the soil often gets thoroughly wet, and the benefit which should result from covering is never realised. Where the border is thatched or covered with litter clear it away, and lightly fork over the soil before putting on the covering. Thin deal shutters, in breadths of 6 ft. by 12 ft., make the best protectors. One end should be placed close against the front of the house, on two bricks, one above the other, and a shutter 12 ft. from this is generally sufficient protection. The lower or bottom end should rest on one brick, thus sufficient incline is given to throw off the water and space is left between the boards and the soil to allow a free circulation of air. Glass sashes do quite as well as wooden shutters, but during autumn and winter these are generally needed for other purposes. Tarpaulin may be used where neither of these protectors can be had, but it is inferior to both of them. The outside borders of houses in which the Vines are to be started into growth about November should also be covered.

Pines.—Queens, intended to be started in the end of December or beginning of January to supply early fruit, must now be kept somewhat drier at the roots than they have hitherto been, and manure water need not be longer used. The bottom-heat should be allowed to fall to about 70°, and plenty of fresh air should be allowed to circulate about the plants on fine days. Where plants have not been specially prepared for fruiting early the most mature-looking should be used for this purpose. Suckers of all kinds may still be taken off and potted. They will require a bottom-heat of 90° until they are rooted, and plenty of light, in order to insure their keeping well throughout the winter.

Hardy Fruit.

Gathering fruit as it ripens is now an important point, and requires great attention. Fruits must not be gathered when wet, nor during hot, sunny weather, and they must be handled very gently. In the case of early Pears, it is not well to leave them on the trees until they are quite ripe; as a rule, they should be gathered a day or two before they are in that condition, otherwise they are apt to become dry and rotten at the core. The choicest wall fruits should be protected from wasps, birds, and flies, with hexagon netting or other material of that kind. Remove all unnecessary lateral growths, and expose the fruits as freely as possible, particularly the dessert sorts.

Root-pruning Apple, Pear, and Plum Trees.—By continually pinching out the points of the shoots of Apple trees they may be kept as dwarf as Gooseberry bushes, and small trees laden with Apples are very interesting, and are suitable for some situations; but thus to induce a diminutive habit of growth entails continual watchfulness, and is simply beginning at the wrong end—reducing the strength of the trees by removal of the leaves instead of curtailing the root power, whence the superfluous vigour springs. Where very small Apple trees are required they should be procured grafted on the French Paradise stock, which in a small state is favourable to the production of fruit. Trees worked on stocks of this kind can be kept to the size of an ordinary Currant bush and yet bear fine fruit. They are very suitable for gardens of small extent. They also come into bearing in a very short time after planting—generally the second year, if well managed; but where there is a large demand for Apples, full-grown standard trees are required. These should only receive as much pruning as will keep the branches from becoming crowded, and admit light and air to the fruit. I am now speaking of the orchard culture of Apples and Pears; but in large kitchen gardens, where it is usual to grow these fruits on the margins of the walks, full-sized trees are not admissible, as they overhang other crops, and, by their shade and exclusion of air, seriously injure vegetable of all kinds. This is still more apparent in amateurs' gardens, even when these are of considerable size; but it is in such situations that root-pruned trees are the most suitable. Dwarf Apples (*i.e.*, trees which have little length of clear stem, but which are grafted at a short distance above the ground) are the best. In most cases, where the land is suitable for the growth of Apples, the trees of many kinds will grow away freely for a few years after planting without producing much fruit. From the first do not allow more branches to remain than will furnish the tree, as to let these grow to be afterwards cut away is simply a waste of strength and a loss of time. The nature of the soil, as well as the varieties grown, has much to do with an early disposition to fruit. If, when the trees have attained a height of 6 ft. or 7 ft., and a proportionate breadth, they do not, by forming a sufficient quantity of fruit-spurs, show an inclination to bear; this is generally owing to over-luxuriance, which can be checked by root-pruning. The best time for this operation is in September, after the summer growth of wood has been completed. Open a trench 1 ft. wide on two opposite sides of each tree, at, for the size under consideration, a distance of 3 ft. from the stem, this time pruning only half-way round the trees; the trench must be opened as deep as the roots extend, cutting them all clean off to within the 3 ft. space between the trench and the stem. When there are any that are more than ordinarily strong, and that bear the appearance of having tap-roots, the soil should be worked away underneath, so as to get at these and cut them off, as in the case of those that grow in a horizontal direction. This treatment generally has the effect of causing the trees to set a considerable number of fruit-buds, to be still further increased the season following. If, in the ensuing season, they continue to make too much growth, the remaining opposite sides of the trees (the roots of which have not yet been cut back) should be operated upon. Unless where the soil is of a wet, tenacious nature, trees so treated will generally not require their roots being further interfered with for three or four years, when, if again too strong to be productive, they may be similarly root-pruned at about 12 in. further from the trunk. At the winter pruning, each season, the leading branches should be shortened back to some 6 in. of the point to which they were cut the year previous, until the trees attain a height of about 9 ft. or 10 ft. This is as large as they ought to be allowed to grow in such gardens as those under consideration. When they show a disposition to make too much wood at the expense of the fruit, the roots must again be shortened; by this means they can be kept for an indefinite time in a fruitful state. Root-pruning, either with large or small trees, should rather be accomplished early in the autumn than later on in winter; it must never be attempted in spring, when growth is about to commence, or its effects will be most injurious. Bush-shaped or pyramidal Pear trees in such gardens must be similarly treated in every way. Many varieties of these fruits will not bear satisfactory until they have attained a large size, unless growth is checked by root-pruning. Plums do not usually grow so vigorously; but, to keep them within bounds as regards size, it is often necessary to resort to the reduction of root power. One great advantage with trees managed as above is, that the manure used to the vegetable crops grown near them has not the effect it otherwise would have of producing rampant, unfruitful growth. On light dry soils manure is beneficial in its effect upon the fruit of root-pruned trees.

Kitchen Garden.

Tie and earth up Cardoons in dry weather. Sow American Red Stone, White Stone, and Strap-leaved Turnips on Potato ground, and hoe and thin previous sowings, always using the most advanced roots first. Sow Radishes according to the demand in a warm position; the early autumn sowings generally yield first-rate produce. Sow some Spinach for spring use, and also some early Horn Carrots on a warm border for the same purpose. Earth up Leeks as they grow. Clear away exhausted crops of French Beans. Potatoes, when lifted, should be stored in a dry place, and not laid more than 1 ft. or so in thickness. Under such conditions, they can be turned over three or four times at intervals of ten days or so, each time picking out any that show signs of decay. Those that remain sound after that will be likely to keep. Potatoes should always (but more especially when disease is prevalent) be stored in a cool and thoroughly dry shed, where air can get to them, except in frosty weather. As a matter of course, they must be kept in the dark, or they will become more or less green, which impairs their value as food.

Extracts from my Diary.

September 2.—Sowing Mignonette in pots and a large breadth of Spinach for winter use. Putting in cuttings of Heliotropes to furnish blooms in winter. Potting Pelargoniums and late-struck Fuchsias. Clearing off Onions and placing them in Vineries cleared of fruit to dry ready for roping. Renovating the linings round Cucumber and Melon frames. Gathering Williams' Bon Chrétien Pears, and putting stakes to all fruit trees that require them.

Sept. 3.—Sowing Mustard and Cress; also Red and White Turnip Radishes. Putting in cuttings of bedding Pelargoniums, Ageratums, and Lobelias. Taking up and storing away whilst perfectly dry Paterson's Victoria Potatoes. Earthing up Celery and Cardoons; also putting a little soil round Leeks. Forking over the surface of the ground between late-planted Cauliflowers, in order to admit the rain. Giving Peach and Nectarine trees on open walls a good washing with the garden engine, to keep them free from red spider and other insects. Gathering Lord Suffield Apples and ripe Tomatoes.

Sept. 4.—Thinning Turnips and Spinach. Planting out Coleworts from July sowings to come into use in winter. Making Mushroom beds and spawning others at a declining temperature of 85°. Forking the surface of the ground between newly-planted Cabbage and Broccoli plants. Stirring the soil between late Peas, Spinach, and Turnips. Clearing off Peas and Broad Beans, and preparing the land for other crops. Potting a batch of Carnations and Picotees; also Czar and Neapolitan Violets for early blooming. Tying Chrysanthemums and watering them with guano water. Gathering Summer Thorle, Golden and Kerry Pippin Apples and Pond's Seedling Plums. Watering Lettuce, Endive, and other salad crops, in order to keep them growing and render them crisp.

Sept. 5.—Cleaning and roping Onions when the weather is wet. Picking over Potatoes and sorting out seed and bad ones. Washing shelves and pots. Cutting shreds, labels, and pegs. Cleaning out the fruit rooms ready for storing away fruit.

Sept. 6.—Sowing a batch of Osborn's Early Forcing French Beans in pots for a supply at Christmas. Putting in Ageratum and Heliotrope cuttings for winter blooming. Rolling gravel walks after rain. Removing runners and weeds from Strawberries in pots which are intended for forcing and placing them further apart so that they may be fully exposed to air and sun and their crowns become more hardened. Thinning Turnips and July-sown Carrots; also late-sown Mignonette. Digging borders ready for planting with Cauliflowers and Lettuces. Shifting a portion of Cinerarias and Primulas to warmer quarters. Earthing up Celery. Gathering Coe's Golden Drop and Kirke's Plums; also Williams' Bon Chrétien Pears. Watering Pines and inside borders of late Vineries.

Sept. 7.—Planting Lettuces and Endive in borders so that they can be conveniently covered with spare frames during winter. Pruning Laurels and other shrubs which require it. Stripping leaves from Cabbage stumps in order to get sprouts for the winter. Making a new Mushroom bed and turning more manure for others. Gathering Louise Bonne of Jersey and Jersey Gratioli Pears. Fruit in use for dessert: Pines, Melons, Grapes, Peaches, Nectarines, Pears, Apples, and Plums.—W. G. P., *Dorset.*

Failure of Asparagus.—It may be interesting to know that there has been this year, in this part of the country, a very general failure in the Asparagus crop, which, I suppose, may have been caused by the cold, wet season which we had last year preventing the maturing of the buds for this year.—A. C., *Melrose, N.B.*

Potato Vicar of Laleham.—This is a valuable addition to our stock of main crop Potatoes. It was raised by the Rev. Mr. Peake, Vicar of Laleham, and is the result of a cross between Red Emperor and Paterson's Victoria. The haulm somewhat resembles that of Flourball; the tubers are rich violet-purple in colour, and have flesh of the whitest quality. In shape they exactly resemble the Victoria, and, indeed, might well be described as a purple Victoria. It is ripe several weeks earlier than the white kind, and is a larger cropper.—A. D.

GARDEN BOTANY.

(Continued from p. 185).

Morphological Nature of the Pistil and Ovules.—We have explained in a previous paragraph what is the generally accepted view of the nature of the organs borne by the stem, that they are all modifications of one type of growth; and it has been shown that there is frequently a gradual transition or progressive metamorphosis from ordinary foliage leaves into bracts, sepals, petals, and stamens. Sometimes there is a more or less complete reversion or retrogressive metamorphosis of the organs, as in the green Rose, in which the parts of the flower are replaced by green leaves, and in the double-flowered Cherry, in which the centre of the flower is often occupied by an ordinary green leaf or leaves. The ovules are outgrowths from the margin or some other part of the surface of the carpellary leaf, somewhat analogous to the buds which appear on the margins of the leaves of Bryophyllum (fig. 1) when subjected to favourable conditions. It is true, however, that some botanists regard the part to which the ovules are attached as always belonging to the axis, and the other part of the pistil as foliar; but this view is not in accordance with some well-established facts. It is quite possible that ovules are sometimes produced on the floral axis, though in the majority of cases they are doubtless borne on the appendages of the axis—the carpellary leaves. A single carpel of a polycarpellary pistil, as that of Columbine, or the monocarpellary pistil of the Pea, is in reality very much like a leaf folded together and cohering by its edges. On splitting open the ripe pod (legume) the Peas are found attached to the ventral suture alternately on each side. We may now examine a few of the principal modifications of the pistil.

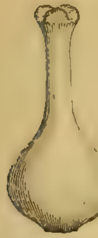


Fig. 499.—Pistil of Celosia, with a single style and a three-lobed stigma.

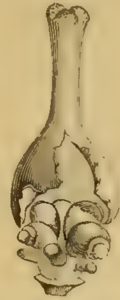


Fig. 500.—Pistil of Celosia; the shell of the ovary torn away, showing the single cavity and the ovules attached to the base in the centre.

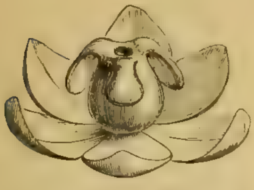


Fig. 501.—Pistil of Rheum, with a three-lobed recurved stigma, denoting the three carpels of which it consists.

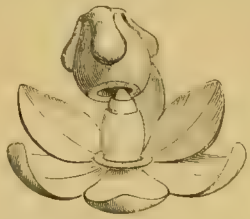


Fig. 502.—Pistil of Rheum, the ovary lifted, showing the position of the solitary ovule.

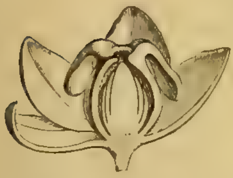


Fig. 503.—Section of the pistil of Rheum, to show the one-celled ovary and solitary erect ovule.

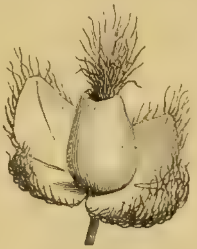


Fig. 504.—Pistil of Nettle, with a feathery stigma.

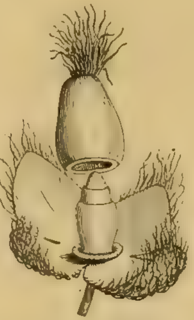


Fig. 505.—Pistil of Nettle, the upper part raised, revealing the position of the solitary ovule.

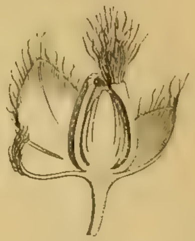


Fig. 506.—Section of pistil of Nettle, showing the one-celled ovary containing a single erect ovule.

Pistils with a Superior Ovary.—When the pistil consists of a single carpel, this is usually a little excentric and its style oblique, and when, as in the Columbine, there are several free carpels, their styles are oblique and radiate from the centre; but when there are several carpels forming a syncarpous pistil, whether the ovary be one or more celled, the combined or free styles are central, at least at the base. The pistil of Celosia (figs. 499 and 500) has a superior one-celled ovary, composed of three carpellary leaves, as indicated by the slightly three-lobed stigma, and the ovules are attached to a

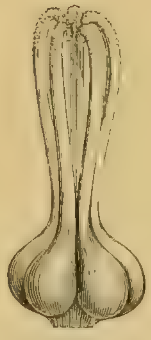


Fig 507.—Pistil of Coriaria myrtifolia, having a five-celled ovary and five free styles.

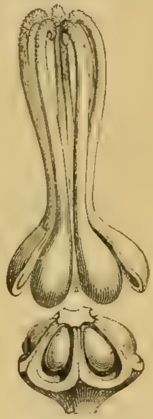


Fig. 508.—Pistil of Coriaria, showing position of the ovules in the ovary.

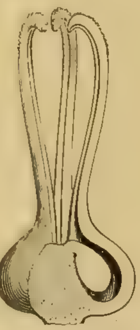


Fig. 509.—Section of the pistil of Coriaria, showing the solitary pendulous ovule in one of the cells.

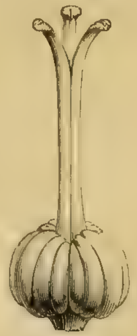


Fig. 510.—Pistil of Tropæolum; three-celled.

free central placenta, which scarcely rises above the base of the ovary. In Rhubarb (figs. 501 to 503) the pistil is also tricarpellary, but it contains only one ovule.

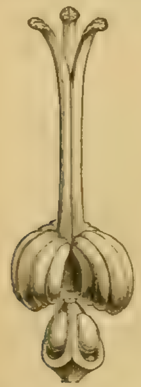


Fig. 511. — Pistil of Tropæolum, parted through the ovary, showing the position and number of the ovules.

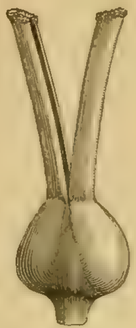


Fig. 512.—Pistil of Tremandra verticillata, with a two-celled ovary and two distinct styles.

The superior one-celled ovary of the Stinging Nettle (figs. 504 to 506) also contains only one ovule, and differs mainly from that of Rhubarb and Celosia in being built up from one carpel instead of three.

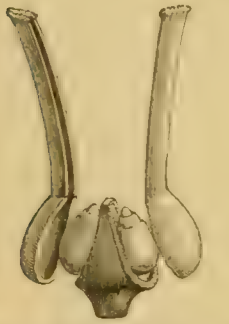


Fig. 513.—Pistil of Tremandra, with the styles and backs of the carpels removed, showing the position of the ovules.

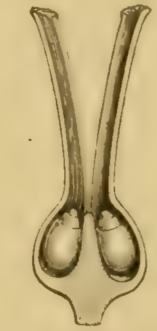


Fig. 514.—Pistil of Tremandra verticillata in section, showing the two-celled ovary with one ovule in each cell.

It has an exceedingly short slightly excentric style surmounted by a feathery stigma.

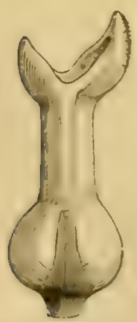


Fig. 515.—Pistil of Polygala, with a single style.

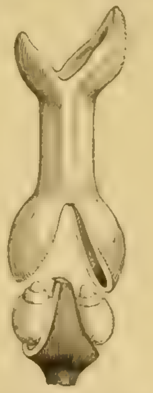


Fig. 516.—Pistil of Polygala; a part separated to show the two cells of the ovary with one ovule in each cell.

The pistil of Coriaria myrtifolia (fig. 507) is deeply lobed and almost apocarpous; in fact, the carpels separate from each other and the axis when ripe; but in the young stage (as shown in figs. 507 to 509) it may be described as a superior, syncarpous, five-celled pistil, with free styles and one pendulous ovule in each cell. In the Nasturtium (figs. 510 to 512) we have a very similar kind of pistil, composed, however, of three carpels instead of five, which cohere more than those of Coriaria, though easily separated when ripe.

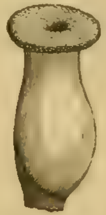


Fig. 517.—Pistil of Berberis vulgaris.

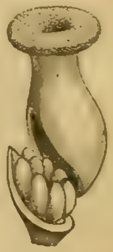


Fig. 518.—Pistil of Berberis, with the upper part separated to show the insertion of the ovules in the ovary.

Tremandra verticillata (figs. 513 and 514) is an example of a pistil with a two-celled ovary, having one ovule in each cell, and the styles free from each other down to the top of the ovary. In Polygala cordifolia (figs. 515 and 516) the ovary is almost the exact counterpart of that of Tremandra, but the styles cohere throughout their whole length.

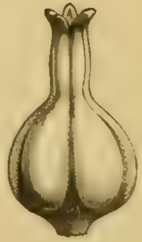


Fig. 519. — Pistil, having an ovary which is one-celled with parietal placentation in the upper, and several-celled with axile placentation in the lower part.

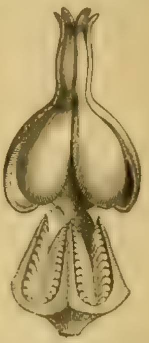


Fig. 520.—The same, with a portion separated to show the insertion of the ovules.

We will now review a number of pistils having a superior ovary containing more than one ovule in each cell, commencing with that of Berberis vulgaris. In this the ovary is only one-celled, with several ovules rising from the base of the cell (fig. 518).

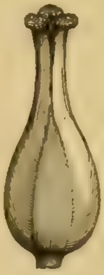


Fig. 521.—Pistil of Hypericum hircinum.

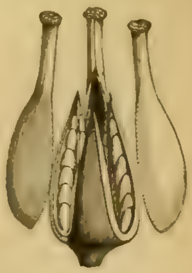


Fig. 522.—Pistil of Hypericum, with portions separated to show the position of the ovules in the ovary.

Note, too, the short stout style and peltate stigma. The ovary of the pistil (figs. 519 and 520) is one-celled in the upper part and five-celled at the base. Something similar occurs in Hypericum hircinum (figs. 521 and 522), but there are only three carpels. In the Violet (fig. 523) the ovary is completely three-celled, with three parietal placentas. In Cleome (figs. 524 and 525) the numerous ovules are arranged on two opposite parietal placentas, and the pistil is composed of two carpels. A still more simple pistil is characteristic of the Leguminosæ (Pea, Bean, &c.) Here it consists of one carpel, and the ovules are arranged in a double row down one side of the ovary, as in fig. 527. W. B. Hemsley.

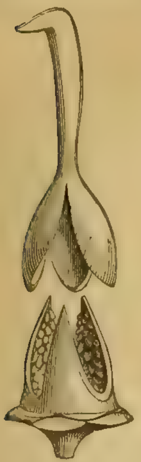


Fig. 523.—Pistil of Violet, with top part separated to show the three parietal placentas.

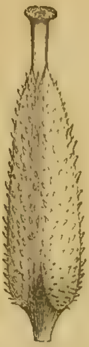


Fig. 524.—Pistil of Cleome viridiflora.

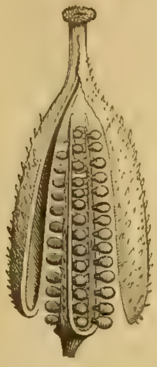


Fig. 525.—Pistil of Cleome, with ovary opened to show the two parietal placentas.

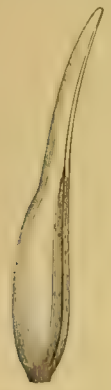


Fig. 526.—Pistil of Phaseolus vulgaris.

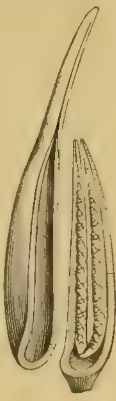


Fig. 527.—Pistil of Phaseolus vulgaris, with the ovary laid open to show the two rows of ovules on one side.

The Plant-lore of Shakespeare.—Of this book the "Pall Mall Gazette" spoke the other day as follows: "Every one who knows anything of horticultural literature has read of Mr. Ellacombe's famous garden at Bitton, in Gloucestershire. They may now meet him in a less special department of the same ground. Mr. Ellacombe has reprinted from The Garden a series of papers on 'The Plant-lore and Garden Craft of Shakespeare,' and it would be hard to name a better commonplace book for summer lawns. Every passage in which Shakespeare names a plant is cited, illustrations are given from contemporary writers, the plant is identified if need be with its modern representative, and occasionally a few short notes are added on its cultivation. Thus the lover of poetry, the lover of gardening, and the lover of quaint, out-of-the-way knowledge will each find something to please him: how much more when, as we may hope is not seldom the case, all three affections are found growing side by side in the same mind."

THE KITCHEN GARDEN.

NOTES ABOUT LETTUCES.

Some of the best Lettuces I have ever had have been grown on the ridges between the rows of early Celery, thus proving that depth of soil will, in a great measure, compensate for the disadvantages of an elevated position on a porous soil during a dry season. Of course, a little mulch laid round the plants has kept the surface cool and checked evaporation. I am growing this year two new Lettuces (new at least to me), called Silver Star Cabbage and Little Queen Cos; the former somewhat resembles All the Year Round, but is larger and firmer. The latter is a very close-growing dwarf green Cos, stands dry weather well, and is altogether a most desirable acquisition. They were sent out originally, I believe, by Messrs. Jeffries & Son, of Oxford. All Cos and most Cabbage Lettuces are better for being tied up a few days before they are required for use. Tying up seems to impart a greater amount of crispness to Lettuces, even when it may not be necessary to do so for the purpose of blanching. Two indispensable varieties for sowing now are the Black-Seeded Brown or Bath Cos and Wheeler's Tom Thumb Cabbage. There are several forms of the Bath Cos; but one called Wood's Bath Cos is the best I have had—the growth is more compact, and there is less irregularity among the plants, showing that the stock has been carefully selected. In sowing now, the most open situation should be selected, and the land should be well prepared. The best plan is to sow in drills, 12 in. apart, and, if the weather continues dry, thoroughly soak the drills with water just previous to sowing the seeds, without wetting the intermediate spaces; and cover the seeds lightly with some of the dry soil from the edges of the drills, if it has been well broken up and pulverised, otherwise it will be better to obtain a few barrowfuls from the heap of soil that should be reserved for such purposes when the periodical arrangement of the compost yard takes place. The next sowing, which will, in the majority of situations, be made about the end of the present month, should be on some elevated or slightly raised border sloping to the south, backed up with a hedge or some temporary screen if possible. Lettuce plants in damp situations suffer much both from the natural decay engendered by the presence of too much moisture, and the greater liability to injury from frost; and there is always great difficulty in such situations in keeping snails and slugs at bay. There is nothing better to get rid of the latter pest than a sprinkling of sifted coal-ashes run through a ½-in. sieve, just sufficient to cover the surface, and it is equally effective against worms coming out at night and drawing the plants back with them into their holes. Nothing of a soft, slimy nature that crawls over the earth's surface will willingly face their sharp jagged edges, and they may be used freely among young growing crops in autumn and spring with beneficial effects in other ways; besides guarding the plants from insects' attacks, they attract the rays of the sun, keep the soil from baking, or its pores becoming sealed up after heavy rains, and tends to check any bad effects from too much water lodging round the stems or collars of the plants, and I would strongly advise anyone who has had much trouble with slugs to sprinkle coal-ashes amongst all their young crops. They will be found both a good and cheap remedy, and one that is always available. E. Hobday.

Prickly-seeded or Winter Spinach.—No time should now be lost in getting in a good sowing of this where a supply is in demand during winter and early spring. To have the leaves large and succulent the soil should be deeply dug and enriched with manure. The seeds should be sown thinly in drills about 18 in. apart, and, if the soil be at all dry, the drills should be well watered before sowing. If the seed be steeped in water for a few hours previously it will germinate more quickly. Frequent surface-stirring and early attention to thinning the plants is necessary in order to allow the plants to fully develop themselves and yield large foliage. It is always best to allow them to get well established before any leaves are gathered from them. Spinach is liable to go off with a kind of canker at the root in retentive or wet soils. In this case the best way is to sow on ridges or on sloping borders. It is always well to make two moderate sowings to allow for variations of seasons.—J. Groom.

Planting Cabbages with a Crowbar.—I ventured last year to inform your readers that I always planted my spring Cabbages after Onions without any digging, merely using a crowbar for making the holes. This Mr. Groom designated simply tickling the surface. In a recent impression of The Garden, however, he absolutely advocates my mode of planting, a circumstance with which I am well pleased. Mr. Groom sees the inutility of digging, and I hope he will in future gives my modes of cultivation a fair trial before he condemns them.—R. Gilbert, *Burghley*.

GRAPE AND VEGETABLE CELLARS IN THE NORTH OF CHINA.

In a recent number of the Reports of the French Société d'Acclimatation Mr. J. G. Dunn gives an interesting account of the construction and use of the cellars employed in the north of China for the preservation of fruit and vegetables through the winter. These cellars are called *ti-kiao* by the Chinese, and are generally rectangular in form. Ninety-five times out of a hundred they have the following dimensions, measured inside: 12 ft. to 14 ft. long, 9 ft. to 10 ft. wide, and 7¾ ft. to 8 ft. deep. Small cellars of this size are the most common, and are to be preferred on account of their being more easy to keep in order; besides which, the construction of the roof allows of the use of small pieces of light wood, costing but little, a single chimney only being necessary. When the cellar is larger, the roof must be supported by heavier timbers, there is greater danger of the falling in of earth forming the sides, and more than one chimney will be necessary for carrying away the smoke given off by the heating apparatus. The following are the conditions which must be complied with in order to insure success: 1. The cellar must be dug out in a perfectly dry spot far removed from marshes and watercourses, and a position having a natural height of 3 ft. or 4 ft. above the ordinary level should be chosen in preference to any other. 2. When the place intended for the cellar is dug out, the sides must be neatly trimmed in such a way that it is slightly larger at the bottom than at the top; the floor is then properly levelled, and it must be well beaten down with a pavior's rammer, so as to make it as hard as possible. 3. The earth taken out of the cellar must next be well sifted through a fine sieve, so as to get rid of all the stones, after which it is mixed with Millet straw, to which has been added a certain quantity of lime, the whole being worked up into a kind of mortar by pouring water on it. The mortar thus obtained approaches very closely in composition to that generally used in the construction of walls and houses in this part of China, the only difference being that in the first case there is a larger admixture of Millet straw. The four sides of the cellar are covered with this mortar, the beaten floor being left uncovered. The walls are built so as to rise to the height of from 2 ft. to 2½ ft. above the level of the soil, and are allowed to dry thoroughly. When quite dry, the tops of the walls are levelled with care, and light planks are thrown across from one to the other, the whole being covered over with mats made of Millet straw, or else with the loose straw itself, or, in default of this, with light boards. The cellar is now ready to receive its proper roof, which is made of a similar sort of mortar to that used for the walls. This roof ought to be from 2 ft. to 2 ft. 6 in. in thickness, and very carefully laid so that it may have a double inclination, as shown in fig. 3, for the rain to run off. In one of the corners of the roof a hole is made, sufficient to allow the introduction of a basket, of from 2 ft. 4 in. to 2 ft. 6 in. in diameter. The only other opening to be made in the roof is one for the passage of the smoke pipe. To enter the cellar neither a ladder nor staircase is required; the labourer lets himself down by means of a rope, with which the entrance is furnished. In one corner of the cellar, a *kang-tze*, or bed of beaten earth, is formed similar to those used by the inhabitants of the north of China for domestic purposes. It is made with a similar kind of mortar to that used in the construction of the walls and roof. The dimensions are generally 7 ft. long by 4 ft. wide. Underneath this bed is formed an ordinary furnace, as shown in figs. 2 and 3, which is always lighted during the night until the cellar walls and roof are perfectly dry. When the stock of fruit and vegetables is laid in, the furnace is lit twice a day, at dawn and at sunset. At each firing the furnace consumes about 20 lb. of Millet straw, or about 40 lb. per diem. The chimney carries off the smoke of the straw, and facilitates the circulation of the air. It generally rises about 2 ft. above the level of the roof. There are no internal supports to the roof, the walls, when once dry, being quite strong enough to resist all lateral strains. If there are no inundations, these cellars, when properly made, will last for twenty or even thirty years, necessitating only slight repairs from time to time. A single inundation is, however, sufficient to destroy them, or, at any rate, to render them perfectly useless. No bricks are used in the construction of these cellars. A cellar constructed according to the method described above may be used as a forcing house during the summer for the cultivation of Leeks and other vegetables, which the Chinese epicures like to be as white as possible. These vegetables are grown in baskets made of Millet straw, which contain a suitable mixture of rich mould and manure. Leeks and other vegetables, grown in these cellars, always fetch a higher price in the market than those grown in the open ground in ordinary market gardens. It is not at all improbable that Mushrooms could be grown in these cellars. The baskets are taken away in November or early in December, and the chimney and furnace are repaired, the latter having always been kept alight during the summer, with just sufficient fire to push forward the growth of Leeks and other vegetables. As soon as the frost sets in the floor of the cellar is covered over with a layer of lime. The vegetables or fruit to be preserved are arranged in double rows, separated from each other by a space of 1 ft. 3 in., to facilitate the circulation of the air. Cabbages are piled up to a height of 4 ft., those underneath being kept from contact with the soil by a layer of dry Millet straw. On the top of these rows of vegetables are placed the fruits contained in baskets. In this way not only ordinary vegetables, but Grapes, Pears, Apples, Plums, &c., are successfully preserved throughout the winter and spring. The fruits are put into the baskets without any previous preparation, except, indeed, the separation of any specimens that seem to be over-ripe, specked, or inclined to decay, all of which must be strictly set aside. If this previous examination is made with a proper amount of care, the number of fruits

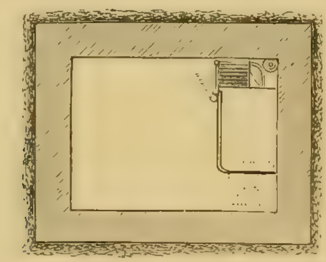


Fig. 1.—Ground plan of the cellars used by the Chinese for the preservation of fruit and vegetables.

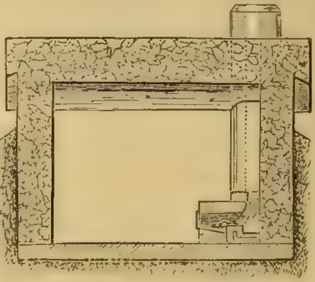


Fig. 2.—Longitudinal section.

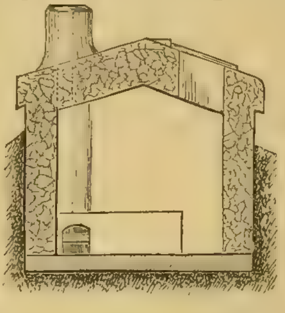


Fig. 3.—Transverse section.

which are spoiled in the six months of winter and spring is very small indeed. The baskets containing the fruit are piled one on the other right up to the top of the roof. They must be taken down and examined every day, so as to know if any of the fruit or vegetables shows signs of decay, in which case they must be removed at once for examination. This operation should be conducted in dry weather, or if of necessity in wet, the suspicious fruit or vegetables must be set aside for further examination on the first dry day. A cellar, let us say, of medium size will hold somewhere near 60 tons of Cabbages, and from 50 to 60 baskets of fruit, each basket weighing 50 catties, or about 66 lb. Fruits preserved in this fashion keep perfectly good without any perceptible change in their appearance or flavour for from six to eight months. According to the Chinese, Cabbages improve greatly by this treatment, and their flavour far surpasses that of vegetables fresh from the market garden. The loss of weight in the Cabbages during six months is almost inappreciable. To build a cellar of the dimensions given above costs from 8 to 10 dols., say, from £1 10s. to £2. The inner roof and walls, for they are little else, are quite sufficient to protect the interior from all wet and damp. As this account was written in November, at the time, in fact, when the operation of storing is only just beginning, the author was unable to give us the exact degree of temperature which is necessary for the preservation of fruits; but, according to information which he has collected from various trustworthy sources, he thinks that the average temperature of the cellar throughout the winter is from 75° to 80° Fahr. If the cellars were to be kept at a higher temperature than this, the Grapes would be turned into raisins, and the Potatoes and other vegetables would be dried up. Before being stored in the cellars, the vegetables are exposed to a free current of air for one or two months. In the same way the fruits are packed in the baskets some time in advance. Plums and Pears are generally gathered about the month of August or September; Grapes at Tien-tsin at any rate in September and October. A man sleeps near the cellar throughout the winter to prevent the fruit and vegetables from being stolen. The neighbourhood of these is greatly frequented by gamblers, the temperature in their immediate vicinity being extremely agreeable on cold winter days. To build one these cellars, stock it with fruit and vegetables, and keep it in proper order requires but a minimum of care and capital; hence their frequency in the neighbourhood of all large towns and cities in the north of China, where they have been common for centuries past. The opening through which access is gained to the cellar is generally covered over with a piece of matting, usually stretched over a wooden frame, to keep out the cold. C. W. Quin.

FLOWER SHOW AT VERSAILLES.

The recent flower show at Versailles was of some interest to English horticulturists, from the fact that Mr. Wills sent so many valuable and rare plants there, and that Messrs. Veitch also sent over one of their select and varied groups of plants. Mr. Wills showed some of the finest specimens known of some of the rarest and most beautiful Palms and Dracænas, and with his varied collection won fifteen of the more important prizes and the major prize of the show, a valuable Sevres vase, offered as the grand prize of honour for the grower who contributed most to the riches and beauty of the exhibition. Messrs. Veitch sent over their superb new hybrid Cattleya, and Mr. Linden had also a fine collection of new plants. Our exhibitors were in good company, for M. Truffaut and other growers present had many collections of exotic fine-leaved plants, very well grown. Among the groups at the show most interesting to the stranger were the free-flowering Oleanders in various sizes; little Pomegranate standards, sparkling with flowers; and a race of double Petunias with fringed and incised petals. To us, however, the most charming exhibit in the show was a large, slightly raised bed of Gloxinias, bright and delicate, and varied in colour. The mass was beautifully softened and varied with tufts of Maiden-hair Fern in small low pots, so placed that only the spray of the Fern was seen here and there among the Gloxinias. These possessed every charm of colour from the most bright and intense self or margined flowers to the most refined and delicate spottings on pale ground, and to pure large white flowers, many of the blooms being unusually large. This flower has not, as yet, seen its best days in our collections. It requires much less heat than it used to be treated to, and successive batches may prolong the bloom throughout the spring and summer.

ANSWERS TO CORRESPONDENTS.

Bleaching Skeleton Leaves.—How can I bleach Fern leaves that have been skeletonised? [Bleach them in a solution of chloride of lime, made by adding two table-spoonfuls to one gallon of water.]

Cones of Cedrus Deodara.—In reply to "J. J. R.'s" enquiry (p. 170), I am able to state that a well-grown specimen of this tree at Sondes Place, near Dorking, under thirty years of age, produced cones last year for the first time, and they appeared to ripen very satisfactorily.—Dyce Duckworth, M.D., *Sandhills, Betchworth, Surrey.*

Earthing up Tree Trunks.—Will earthing up tree trunks 7 ft. kill them or not? In making a garden terrace two fine trees, which we should not like to lose, have been buried to that depth.—H. C. L. [If you wish to keep your trees alive you must build a wall around them at from 9 in. to 12 in. from the trunk, commencing at the base and building a little higher than the present surface of the ground. I know of several large trees that have been treated in this way, having more than 7 ft. of soil over their surface roots, and yet they are still doing well.—G. S.]

Poplar Tree Stumps.—What can be done to destroy vitality in the roots of Poplar trees cut down near the ground, but not grubbed? The roots spread to great distances, and are constantly putting forth shoots and forcing up the gravel walks.—R. R. [You had better blast the stumps with either gunpowder or dynamite, and afterwards grub up all the stronger roots that can be found within 18 in. of the surface of the ground. If the roots must remain in the ground, their decay may be hastened by boring holes at or near the point where the suckers protrude through the surface of the ground and filling them with gas tar, but in every case where practicable the stumps should be removed. —G. S.]

Double Primulas.—All I have to say by way of answer to Mr. R. Gilbert (p. 186) is, that if the same treatment be given as is recorded (p. 135), double Primulas never take more than three weeks at the most before they strike root, and upon looking them over some will be found to be ready even within the three weeks.—H. H.

Earthing up Celery.—What is the best method of doing this, where the soil is stiff clay, so as to prevent worms spoiling the hearts?—A. L. S. [Under such circumstances you should blanch with Cocoa-nut fibre, sand, or friable soil put close round the plants. Such materials can be backed up with the clay broken to pieces as much as possible. Celery should always be earthed up when both soil and plants are in a dry state. Common half-drain tiles placed round the plants and filled up with sand is a method sometimes adopted under such circumstances, but it is rather expensive.]

Names of Plants.—*Miss T.*—The botanical name of the flower which is called by the French Belle de Nuit, and which only opens about six o'clock in the evening, is Mirabilis Jalapa, or Marvel of Peru. *F. T.*—1. Acanthus spinosus. 2. Helianthus multiflorus fl.-pl. 3. Apparently a bit of Alternanthera. 4. Phlox subulata. *M.L.S.*—Smashed to pieces, but apparently a portion of a Giant Puff-ball (Lycoperdon giganteum), figured in The Garden (Vol. XII., p. 326). *E. N. Cole.*—Tillandsia xyphium; an epiphyte, not a parasite, belonging to Bromeliaceæ; it grows generally in the West Indies and Brazil. *Chipping Lodbury.*—Certainly Hydrangea paniculata; but, from the scrap sent, we are unable to say whether it is the variety called grandiflora or not. *R. Leycester.* —Rose-growths such as that which you have sent are not uncommon. They are the result of some disturbance either at roots or top, and show the close relationship that exists between leaf-buds and flower-buds in certain stages of development.

Pruning Cordon Apples and Pears.—I have several cordon Apple and Pear trees, but am not clear as to the method of pruning them. I pinched back the shoots to three or four leaves in June last, but these have again extended themselves. What is the proper method of dealing with them? and of what does the winter pruning consist?—Amateur. [You did quite right to pinch the new growths in June; do them again at once, of course leaving, at least, two or three leaves in advance of where you previously pinched them. Usually free-growing cordons require pinching about three times in the course of the summer. The winter pruning consists in cutting out any ugly or misplaced old spurs, and any long shoots that were not summer-pinched.—W. W. H.]

Melon Seeds Germinating Inside the Fruit.—In reply to "G. T." (p. 187), I may mention that I had a similar experience three years ago at Orotara, in the island of Teneriffe. Don Carlos Smith, a well-known English resident on the island, showed me a large Melon grown in his garden, which contained over a dozen germinating seeds. Neither he nor his gardener had ever observed such a phenomenon before. The cotyledonary leaves were scarcely tinged by chorophyl. The Melon was quite edible, and, so far as I remember, of good flavour. No explanation was forthcoming as to the cause, and I think there was no breach of surface noticed. I recorded a note of the circumstance in the "Transactions of the Botanical Society of Edinburgh" in 1876, and sent some of the specimens to the University Museum preserved in glycerine. I have now by me some of the seed of the same stock of Melons, and shall be happy to send some to "G. T." if he will furnish me with his address. I may add that Mr. Smith failed to raise any plants from seeds taken from the Melon particularly referred to. I believe the occurrence is not very uncommon in members of the Cucurbitaceæ. —Dyce Duckworth, M.D., *Sandhills, Betchworth, Surrey.*

Tuberoses.—I would be glad of some information as to the successful culture of Tuberoses. With me they become "drawn," and the blossoms are very poor. I have had them in a cool greenhouse; would they do better after they are started if kept in the open air? —A. C. [Tuberoses require a rich, light soil, and the roots start best if plunged in a slight hotbed, where they should remain till growth has fairly commenced, and the pots are full of roots; then gradually withdraw them from bottom-heat, give plenty of air, and keep the plants as near the glass as possible. They would, no doubt, succeed well if in a sheltered spot in the open air, in which case the pots should be plunged in ashes or other light material, and their flower-stems supported with stakes as their growth progresses to prevent injury from the wind, &c. They require liberal supplies of manure water, but good results need not be expected unless the highest-priced roots are purchased.—W. W. H.]

Lawns on Light Soils.—I am shortly going to lay down a lawn on a very light soil, sub-soil sand. What will be my best mode of procedure?—G. S. [With such a light soil deep trenching is of the first importance, and should be done to a depth of 3 ft., picking out all weeds such as Couch, Nettles, Brambles, Bindweed, &c., during the operation, as they would all help to smother the Grass seeds. The soil described must necessarily be poor, and though it is not desirable to have good land for a lawn, manure would be a great help in giving a good start to the Grass seeds; stable or farmyard manure would be best, but if that is not to be had conveniently, common salt would prove a good manure for such soil. Apply it thickly over the surface as soon as trenched, which should be done early in the winter and left till February; then roll and rake the surface several times before sowing the seeds, which ought not to be sown until the middle of March. Again rake and roll, keep off birds, and you ought then to have a good sward by August.—W. W.]

Arbutus Menziesi and A. procera.—Allow me to thank Mr. Gumbleton for drawing my attention (p. 169) to the characters of these two forms of Arbutus. I now agree with him in thinking that they are distinct, but after a critical examination of both forms, I find that the leaves of A. procera are not always entire, there being crenated as well as smooth-edged foliage on the same plant.—Geo. Syme.

Questions.

Prince Albert Pine-apple.—Can any of your readers give me the origin of this? The fruit and growth of the plant are so much like those of the Black Prince, that I think they must be of the same parentage.—H. W.

Epilobium obcordatum.—This is one of the most difficult plants I have to propagate from cuttings. Can any one give me a hint in order to ensure success?—W.

Wintering Half-hardy Bedding Plants.—I have no greenhouse, but I am desirous of taking a quantity of cuttings, and a few hints as to the best way of keeping them through the winter will be useful to me.—V.

Phloxes Abroad and at Home.—Can Mr. Cornhill or any of the correspondents of The Garden, who have observed what is going on abroad, tell us how it is that the tall autumn Phloxes are so much more healthy, vigorous, and brilliant abroad than at home. About London, even with specialists, I have never seen these fine flowers with anything like the splendour of colour, health, and vigour they show as seen about Paris, both in private gardens and at the Exhibition.—A. V.

Early Peaches.—I should be greatly obliged to any of your correspondents who have a practical knowledge of this matter if they would give me their opinions of Early Beatrice, Dr. Hogg, Early York, &c., under glass. I have already planted these and other varieties, but I am now led to believe that, except for earliness, they are very inferior to the older kinds, and that, on the whole, they are not worth growing. What is the quality of Alexandra Noblesse?—A Subscriber.

Making an Asparagus Bed.—How can I make an Asparagus bed under the following conditions: Soil from 20 in. to 24 in. deep, and then comes "rab," a gravelly sort of grit which will bind for walks? What age should the plants be to put in with safety to bear next year?—H.

Failure in Parsley.—At the commencement of the season I sowed a quantity of Parsley seed on a bed that has had Parsley on it regularly for the last ten years. The bed is alongside a channel for water to run down from the kitchen. For the last year or two we have gathered very little Parsley from this bed. When the leaves are about the size for gathering they become quite yellow, and consequently are unfit for use. The roots also come easily out of the ground when the Parsley is being gathered. Will some one inform me why a good crop cannot be had from this bed? Have worms anything to do with it?—A. Z.

Some Good Herbaceous Plants.—Will you kindly give me a list of some of the very best herbaceous plants? I have none but Phloxes and one Aquilegia, and wish to form a collection.—Dorset Vicar. [The following is a selection of good herbaceous perennials, excluding to a great extent bulbs:—

- Acanthus
  - latifolius
  - spinossisimus
- Achillea
  - asplenifolia
  - Eupatorium
  - Ptarmica fl.-pl.
- Aconitum
  - japonicum
  - variegatum
- Adonis
  - vernalis
- Alstrœmeria
  - aurea
- Anchusa
  - italica
- Anemone
  - alpina
  - angulosa
  - coronaria
  - fulgens
  - Hepatica
  - japonica
  - palmata
  - Pulsatilla
  - sylvestris
- Aquilegia
  - alpina
  - cœrulea
  - chrysantha
  - truncata
- Arum
  - italicum
- Asclepias
  - tuberosa
- Aster
  - Amellus
  - elegans
  - lævis
  - Novæ Angliæ
  - Novi Belgi
  - pyrenæus
  - Reevesi
  - turbinellus
  - versicolor
- Astragalus
  - monspessulanus
- Baptisia
  - australis
- Betonica
  - grandiflora
- Calla
  - palustris
- Callirhoe
  - involucrata
- Calystegia
  - dahurica
  - pubescens
- Campanula
  - alpina
  - carpatica
  - grandis
  - macrantha
  - nobilis
  - persicifolia
  - rotundifolia
  - turbinata
- Carduus
  - eriophorus
- Chelone
  - glabra
  - obliqua
- Commelina
  - cœlestis
- Convolvulus
  - Soldanella
- Coreopsis
  - lanceolata
  - tenuifolia
- Coronilla
  - iberica
  - montana
  - varia
- Corydalis
  - nobilis
- Crambe
  - cordifolia
- Cynara
  - Scolymus
- Cypripedium
  - spectabile
- Delphinium in fine variety
- Dentaria
  - laciniata
- Dicentra
  - eximia
  - spectabilis
- Dictamnus
  - Fraxinella
- Dodecatheon
  - integrifolium
  - Jeffreyanum
  - Meadia
- Doronicum
  - caucasicum
- Dracocephalum
  - argunense
  - austriacum
  - grandiflorum
  - Ruyschianum
- Echinops
  - ruthenicus
- Epilobium
  - angustifolium
  - rosmarinifolium
- Epimedium
  - pinnatum
- Eranthis
  - hyemalis
- Erigeron
  - speciosum
- Erodium
  - Manescavi
- Eryngium
  - alpinum
  - amethystinum
- Erythronium
  - Dens-canis
- Ferula
  - tingitana
- Funkia
  - grandiflora
  - Sieboldi
- Gaillardia
  - aristata
  - grandiflora
- Galega
  - officinalis
- Gentiana
  - Andrewsi
  - asclepiadea
- Geranium
  - ibericum
  - Lambertianum
  - platypetalum
  - sanguineum
  - striatum
  - armenum
- Geum
  - chilense
  - montanum
- Gypsophila
  - paniculata
  - Steveni
- Hedysarum
  - obscurum
- Helenium
  - atropurpureum
  - autumnale
- Helianthus
  - orgyalis
  - multiflorus fl.-pl.
- Helichrysum
  - arenarium
- Helleborus
  - atrorubens
  - niger and its varieties
  - olympicus
  - purpurascens
- Hemerocallis
  - disticha
  - flava
  - fulva
  - graminea
- Hesperis
  - matronalis fl.-pl.
- Iris
  - flavescens
  - florentina
  - germanica
  - Monnieri
  - nudicaulis
  - ochroleuca
  - pallida
  - sambucina
  - subbiflora
  - variegata
- Lathyrus
  - grandiflorus
  - latifolius
  - rotundifolius
- Leucanthemum
  - lacustre
- Liatris
  - elegans
  - spicata
  - squarrosa
- Linaria
  - dalmatica
  - vulgaris
- Linum
  - alpinum
  - arboreum
  - flavum
  - narbonnense
  - perenne
- Lobelia
  - cardinalis
- Lupinus
  - polyphyllus
- Lychnis
  - diurna fl.-pl.
  - chalcedonica and vars.
  - Haageana
  - vespertina
  - Viscaria
- Lythrum
  - Salicaria roseum
- Malva
  - campanulata
  - moschata
- Meconopsis
  - cambrica
- Medicago
  - falcata
- Melittis
  - Melissophyllum
- Mertensia
  - virginica
- Monarda
  - didyma
  - Kalmiana
- Myosotis
  - dissitiflora
  - palustris
  - sylvatica
- Nepeta
  - Mussini
- Œnothera
  - fruticosa
  - Jamesi
  - macrocarpa
  - marginata
  - riparia
  - speciosa
- Omphalodes
  - verna
- Onobrychis
  - montana
- Ononis
  - arvensis
  - rotundifolius
- Orobus
  - cyaneus
  - flaccidus
  - lathyroides
  - variegatus
  - vernus
- Pæonia in great variety
- Papaver
  - bracteatum
  - lateritium
  - nudicaule
  - orientale
  - pilosum
- Phlomis
  - herba-venta
  - Russelliana
  - Samia
  - tuberosa
- Phlox
  - Carolina
  - decussata and vars.
  - ovata
  - paniculata
- Phygelius
  - capensis
- Physostegia
  - denticulata
  - imbricata
  - virginiana
- Phytolacca
  - decandra
- Platycodon
  - autumnale
  - grandiflorum
- Plumbago
  - Larpentæ
- Polygonatum
  - multiflorum
- Polygonum
  - cuspidatum
- Potentilla in var.
- Primula
  - denticulata
  - sikkimensis
- Prunella
  - grandiflora
- Pyrethrum
  - carneum
  - serotinum
- Ranunculus
  - aconitifolius
  - acris, fl.-pl.
  - amplexicaulis
  - monspeliacus
  - montanus
  - spicatus
- Rhexia
  - virginica
- Rudbeckia
  - californica
  - Drummondi
  - fulgida
  - hirta
  - laciniata
  - speciosa
- Salvia
  - argentea
  - patens
- Saponaria
  - ocymoides
- Saxifraga
  - cordifolia
  - crassifolia
- Scabiosa
  - caucasica
- Scutellaria
  - alpina
  - lupulina
- Sedum
  - kamtschaticum
  - Sieboldi
  - spectabile
  - spurium
- Silene
  - alpestris
  - Elizabethæ
  - Schafta
- Sisyrinchium
  - grandiflorum
- Spigelia
  - marilandica
- Spiræa
  - Aruncus
  - palmata
  - venusta
- Statice
  - latifolia
  - speciosa
  - tatarica
- Symphyandra
  - pendula
- Symphytum
  - bohemicum
  - caucasicum
- Thermopsis
  - fabacea
- Thlaspi
  - latifolium
- Tradescantia
  - virginica and vars.
- Tritoma
  - Uvaria
- Trollius
  - asiaticus
  - europæus
  - napellifolius
- Tropæolum
  - pentaphyllum
  - polyphyllum
  - speciosum
- Verbascum
  - Chaixi
- Veronica
  - candida
  - corymbosa
  - gentianoides
  - incarnata
  - incisa
  - Hendersoni
- Vicia
  - argentea
  - Cracca
- Vinca
  - herbacea
- Viola
  - calcarata
  - cornuta
  - lutea
  - pedata

—V.]

No. 355.] SATURDAY, SEPTEMBER 7, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

TUBEROUS-ROOTED BEGONIAS AS SPECIMEN PLANTS FOR THE CONSERVATORY.

ONLY a few years ago we were in great danger of having the floral beauties of our gardens swamped beneath the masses of variegated Begonias. Begonia Rex created something like a panic in most gardens. I was myself bitten severely with the variegated Begonia mania, and never rested until I ribboned out about 2000 plants of Begonia Rex. The result was so discouraging, that I have bedded out none since. The French, however, continue to mass out Begonias in quantities, especially the flowering sections, such as nitida, parviflora, Ingrami, &c. The bulbous Begonias, mostly of the boliviensis and Veitchi sections or families, may also have a brilliant future in the flower garden. Meanwhile, their proper place seems to be the conservatory, greenhouse, and window garden. For such positions it is well-nigh impossible to match the bulbous-rooted Begonias for brilliance, grandeur, and grace—three qualities seldom combined in the same plant. The plants are also characterised by great distinctness and freshness of style and character. The difference between the male and female blossoms; the position of the flowers on the extremities and outer sides of the branches; the semi-pendulous habit of most of the latter; and the forms, numbers, size, colours of their many flowers furnish a combination of ornamental qualities of the highest value.

Begonias are also easily raised from seeds; and though very few of them come quite true, nevertheless over 75 per cent. of the seedlings from good strains are well worth growing. Seedlings have also the additional merit of speedily proving themselves. Cultivators must keep some plants one, two, or even three years before they are able fairly to test their merits. Not so with bulbous-rooted Begonias. Sow in a temperature of 65° in February, and the seedlings will, under generous treatment, be in flower in May, and will form fine bushy plants in 6-in. pots before the end of the summer. But little loss of time and space is therefore incurred in the proving of tuberous-rooted Begonias; and, of course, as soon as they are proved, any inferior plant can be discarded. It will not, however, be possible to test them fairly in such a high temperature. A cold pit in summer, or a cool, airy conservatory stage, is the best possible place to test tuberous Begonias. In such temperate places the colours of the flowers and the habits of the plants will be displayed in their true characters. Tuberous-rooted Begonias can also be propagated by cuttings, though not by any means so rapidly as the non-tuberous or variegated leaved section. Each leaf, and each inch of the veins of a leaf of the latter, may be converted into a plant. It is, however, widely different with these tuberous-rooted sorts. Sections of the stems and branches of most of them root readily enough; but in regard to these plants, that is by no means all that is needful. Two more steps must be taken before the so-called rooted cutting is of much or any use to the cultivator. It must form a bulb, and that bulb must have the power of throwing up a stem next year. This trinity of processes needs time, and demands a considerable amount of skill. It is obvious at a glance that tuberation is a slower, more difficult, and altogether a different process from the making of roots. The latter may be plentiful, the former altogether absent. Neither does tuberation, as a matter of course, succeed roots; it may or it may not do so. The formation of tubers is much more a matter of condition than an affair of time. Much more vital force is needed to develop tubers than to push forth roots; hence the importance of choosing vigorous growing points, and inserting them close to the light to encourage the transformation of the crude juices of the stems and leaves into the more dense fluids and substance of the tubers. But tubers are also possible that lack the ability to break or grow in the following season. This is the most provoking stage of all in the culture of tuberous Begonias—any number of roots there may be, and abundance of healthy tubers, but no starts. This brings us to the last and most important point of all in the propagation of tuberous Begonias by means of cuttings. To make sure that the cutting bulbs will break into fresh shoots the next season, each cutting must have a wood bud under or beside the axil of its lower leaf or stalk; this bud forms, as it were, the growing crown of the bulb, and without it there is no living crown; consequently, no start into growth. This inability to form growing tubers without growing buds somewhat limits the extent and rapidity of the propagation of these fine Begonias from cuttings. As, under good culture, each shoot is nearly all bloom, it follows that there is but little suitable material for propagation. Cuttings with flower-buds at their bases will root and grow freely, but the tubers simply decline to start. The tubers should be kept in the pots in which they are bloomed throughout the winter. They cannot well be too dry, and the temperature should not be lower than 50° or 55°. Cold and damp are two of the greatest evils that cripple and destroy tuberous-rooted Begonias. It is also good practice to start these plants in the old soil. Shaken out in a dormant state and potted in damp soil, or watered before starting, not a few of them either continue dormant, or run into rottenness. If started before potting, these risks are avoided. The plants also, when 1 in. or 2 in. high, lay hold of the new soil almost immediately, and seldom look behind them.

A good soil for these Begonias consists of equal parts turfy loam, leaf-mould, peat, and rotten manure, with a liberal admixture of sharp sand and a dash of bone dust. The collars of the plants should also be kept well up in potting, as fine specimens are somewhat apt to give way, the stems being large and fleshy. It is needful also to be careful in watering to keep the stems as dry as possible, for thick, dense plants, 4 ft. or 5 ft. through and about as much high, are apt to lose a branch here and there from damp, to their great disfigurement, if not the absolute ruin of the specimens. For this and other reasons very large specimens are hardly to be desired. Unless for exhibition purposes, fine bushy plants in 8-in. or 10-in. pots are, upon the whole, the most effective and most beautiful and useful. These Begonias are amongst the finest of all floral material for decorative purposes, either in pots or as cut flowers. For vases, baskets, glasses, &c., they are admirably adapted, and some of the smaller-flowering varieties are equally well adapted for bouquet work. The varieties of these Begonias are very numerous, and the cry is, still they come! There is, in fact, great danger that their enormous numbers will produce a reaction against them. I confess to a strong affection for some of the oldest of the type—boliviensis and some of its improved forms. This is still one of the most graceful and showy of them all, the length and thinness of its brilliant-coloured flowers giving it quite a unique character. Stella is very brilliant, and Vesuvius is a grand, free-flowering rosy-red variety, very difficult to beat; intermedia, a beautiful soft pink, is a profuse bloomer and excellent in habit; Acme, bright rosy-red, is very distinct; Baronne Hruby, brilliant crimson, suffused with violet, is also distinct and beautiful; purpurea magnifica is crimson-scarlet, and C. Baltet crimson, shaded with purple towards the centre; F. Lecomte is beautiful bright rose; Lucien Purcelle, large, purplish-red, and W. E. Gumbleton, rich scarlet, and very large; Adolphe Dubois is creamy-white, tinged with yellow, and Laurent Descours bright rose, large and good. I have not yet grown any of the doubles, and therefore have not recommended them. D. T. FISH.

FLOWER GARDENING IN VICTORIA PARK.

THIS East-end park is, if anything, more attractive this year than usual. As regards sub-tropical gardening, owing to situation, it is not so well favoured as that at Battersea, but, nevertheless, the plants appear to grow with almost equal vigour. One advantage which this park possesses over that of the other parks is its long lengths of shrubbery borders, all of which are so well adapted for the culture of good herbaceous plants, which are, nevertheless, but poorly represented compared with what they might be. If ordinary and pattern bedding and sub-tropical gardening can be carried out in the perfection in which they may be seen here (styles of gardening, by-the-by, which can only be imitated by those who possess hothouses and their necessary appendages), why cannot herbaceous and Alpine gardening be also carried out in perfection, so as to give those who have only shrubbery borders to decorate, a rock garden to plant, or who have not the conveniences for wintering tender plants, an opportunity of judging at all seasons of the year what plants would be most suitable for their own gardens? True, hardy plants are represented here better than in any other London park, but, after visiting a few of the hardy plant nurseries about London, one can see glaring deficiencies as regards variety. It may be urged that public parks are only intended for purposes of recreation, and for affording a pleasant and attractive garden for the people; but, while such large sums of money are expended yearly to produce a striking feature in the way of bedding plants, usefulness might be combined with it without any extra expense, and be of much more benefit to the public at large. Victoria Park, though one of the newest, is, without doubt, one of the best managed of our parks, as far, at least, as gardening is concerned; and, if a little more attention were paid to the adornment of the borders and other places with suitable plants, it would become one of the most useful, as well as attractive, public resorts in the neighbourhood of London. One other remark might be made, and that is, that none of the plants used either in carpet, sub-tropical, or pattern gardening have names attached to them. Why this should be it is difficult to imagine, for it is a practice well carried out in all our public gardens, and through inattention to it here much useful information is lost. Amongst the sub-tropical plants may be seen Wigandias planted in groups alternately with Eucalypti and edged with golden-leaved Fuchsias pegged down, an arrangement which has a fine effect, as have also large mixed beds composed of Aralia Sieboldi variegata, S. papyrifera, Ficus elastica, Acacias, and Abutilons. Castor-oil plants are robust and finely coloured, and, being allowed plenty of room, are very striking where planted in groups with an undergrowth of Stellaria aurea. Cannas appear to have done well, and form good bands to raised shrubberies. Tobacco plants are not so tall as usual, but are very healthy and vigorous, and they rank among the most effective as well as easiest-grown of sub-tropical plants. The old Erythrina Crista-galli in round groups flowers abundantly, and forms a striking feature where edged with Abutilons and the silvery-leaved Dactylis glomerata. The variegated Abutilon vexillarium is used here as an edging with good effect to beds of Acacia lophantha, which grows amongst a thicket of silver Grass. The Acacias are not so tall as they were last year, but they are more branching in habit and equally effective. The carpet beds are everywhere good in their way; they are planted chiefly with green Mentha, in which are set out a few simple designs in the form of coloured-leaved plants, altogether devoid of that streaky aspect too often observable in carpet gardening. The flower garden properly so called is one glaring crowded mass of colour. The plants, which consist of Pelargoniums, Heliotropes, Ageratums, and the orthodox bedding material, have grown well and are kept in excellent order, but we cannot help thinking that if every alternate bed were removed a much better effect would be produced. Round beds in front of the shrubbery borders, planted with mixed Verbenas and edged with Stellaria aurea, are very pretty; also beds filled with silver-leaved Pelargoniums intermixed with blue Violas. The borders are planted with Helianthus multiflorus fl.-pl., Dahlias, Antirrhinums, Asters, &c., among which are growing annuals, Lilies, &c.; but there is, as we have already said, an absence of really good hardy plants. The rockwork is this year, as usual, a source of attraction; it contains a large variety of Sedums, &c., among which are planted Euonymuses, Aralias, Agapanthus, &c., with a few brightly-coloured Coleuses and Alternantheras. C. S.

Daphne Blagayana.—This pretty dwarf Daphne, of which a coloured figure was given last week (p. 200), is stated to grow well on the chalk; it will, therefore, be a valuable plant for calcareous soils.

NOTES OF THE WEEK.

Tyerman's Groundsel (Senecio pulcher).—This is a noteworthy addition to our hardy plants. The ranks of the Composite family are full enough of good things already, but this is too distinct not to be valuable. It quite comes up to the estimate formed of it last year, and, in addition to the beauty of its thick, fleshy leaves, which have a family likeness on a large scale to the common Groundsel of our kitchen garden borders, its strikingly brilliant flowers possess a decided odour of vanilla.—Salmoniceps.

Lilium auratum in the Isle of Wight.—In the grounds of my neighbour (General Tate) there are some good specimens of Lilium auratum in blossom. Some of them are more than 9 ft. high, and I do not think that I have seen better Lilies of the sort outside of the garden of Mr. McIntosh at Weybridge. I think them worthy of just a brief notice, because the gardener tells me that they were planted five years ago, and from that time to this nothing at all has been done to them. This is rather against some advice that has been somewhat hastily given in your columns, and in favour of the policy of "letting well alone," which has been advocated by one of your correspondents.—H. Ewbank, *St. John's, Ryde.*

Eulalia japonica zebrina.—This promises to be one of the most ornamental of Grasses for isolated positions on lawns or for planting in the shrubbery border. In warm, deep, rich sandy soil it grows rapidly, and its leaves become effectively variegated. One of the best specimens we have yet seen is now growing vigorously in Messrs. Laing & Co.'s nursery at Forest Hill, where it has stood the past winter without any protection whatever, and without sustaining the least injury.

Torenia Fournieri in the Open Air.—It may not be generally known that this beautiful Mexican annual will thrive during ordinary seasons in this country planted out in the open air; in fact, it forms an exceedingly beautiful bedding plant. Some plants of it were put out-of-doors here in the early part of last June, but the weather soon afterwards set in very dry and they made little progress for some time; on a change taking place, however, they grew vigorously, and they are now (the first week in September) in full bloom, and very beautiful they are. They are dwarfer and more robust in habit than others growing in the plant stove. This Torenia may be propagated by means of cuttings, but they are apt to damp off in winter, and plants raised from seed are to be preferred.—P. Grieve, *Culford, Bury St. Edmunds.*

Thladiantha dubia.—This very ornamental perennial Gourd does remarkably well when planted amongst shrubs, and its long shoots allowed to climb at will among their branches. It is not leafy enough to do any harm to most shrubs, and its wreaths of large, bell-shaped, bright yellow blossoms, and neat, heart-shaped pale green, hairy leaves, show off extremely well against a background of dark green, such as that afforded by the Yew, and many other Evergreens. It forms large tuberous roots, and seems to be quite able to hold its own even in rather unlikely spots. We have also seen the beautiful Rose-coloured blossoms of the true Jalap (Exogonium Purga) produced in wild luxuriance and profusion among low shrubs, these forming quite sufficient protection for the tubers during winter. No care in either case is required, and no trouble, except merely that of first planting the tubers in the positions which they are intended to occupy.—G.

Heading Back Sweet Peas.—Visiting Heckfield a few days since, I noticed a row of Sweet Peas just coming into flower. Remarking upon the late period of the year at which they were blooming, Mr. Wildsmith mentioned that they had been previously finely in flower, but that when getting rather past their best they had been cut down, even with the tops of the sticks, and renewed growth was the result. From the bottom to the top a new growth had sprung up, and there will be an abundance of bloom until the end of October. I saw just such another row of Peas elsewhere a few days previously that had run to seed and that were almost flowerless, yet not a pod of the seed was wanted. Had the heading-back process been adopted there, the result might have been much more satisfactory.—A. D.

Mr. Laing's Begonias.—These are at the present time, if possible, more attractive than they have been all the season; the plants have gained strength, their flowers are larger and richer in colour, and are produced in greater profusion than they hitherto have been. Ever since early in May a houseful of them has been a source of attraction, and to all appearance they will keep on flowering far into the winter. A large breadth of ground in an open sunny position, planted with small seedling plants of these Begonias in May, is now one mass of blossom, and, whilst Pelargoniums and other bedding plants are almost flowerless on account of the heavy rains to which they have lately been subjected, the beauty of these Begonias appears rather to improve than to be impaired by the wet.

Those planted out at present consist of the drooping-flowered kinds, of which there is now an abundance, varying in height from 4 in. to 2 ft.; they may, therefore, be used in beds or borders of any size. For edgings some of the dwarfer kinds will no doubt be largely used, and it is not improbable that these Begonias will become important market plants. The erect-flowered type have not yet been fairly tried out-of-doors; at present, therefore, it is uncertain whether they will withstand the weather so well as those with drooping blossoms.

Variegated Ontario Poplar (Populus candicans).—There is a very handsome variegated form of this Poplar in the Lawson nurseries, Edinburgh, the foliage of which may now be seen in fine condition there.

Bedding Plants in 1878.—We do not remember to have seen bedding plants looking so wretched in the first week of September as they do at present in the London parks. This is, no doubt, owing to the heavy rains.

Acer Schwedleeri.—This is just now very beautiful. It is making its second growth, and the colour of the leaves on the young shoots seems to look richer even than it did in spring.—G. B.

Clematis Pitcheri.—In consequence of a paragraph in a contemporary respecting this plant, we may say that the true species bears really a very bright and pretty red flower. We saw the first plant that flowered in Europe, and were much struck with its brightness and novelty.

Galingale (Cyperus longus).—What a beautiful native plant this is! I, however, write to claim a place for it in the garden in wet ground or in water, owing to its elegant and stately habit. It is also in perfection just now when fine plants in flower are diminishing in numbers. There is no ornamental Grass or water-side plant more worthy of a place.—R.

Plumbago capensis.—This fine old plant is now a picture in the conservatory in the Botanic Gardens, Regent's Park, clothing a high pillar, and spreading from it far beneath the furrow of the roof on each side, the numerous weeping shoots as thickly set with blue flowers as Alpine meadow Grass in June. It is the best and easiest to grow of all climbers for pillars in cool houses planted in the floor or bed of the house in ordinary soil.

Oxalis Plumieri.—This Oxalis, though little grown, might be cultivated with advantage wherever a warm house exists. Plants of it growing in 5-in. pots in one of the houses at Pine-apple Place have borne a profusion of pretty golden-yellow blossoms all through the summer.

Dwarf Antirrhinums at Tottenham.—A large breadth of seedling Antirrhinums in Mr. Ware's nursery is now a fine sight. The plants themselves are not more than 4 in. or 5 in. high, and their flower-spikes, which are very numerous, are thickly clothed with blossoms ranging in colour from white to deep magenta and crimson. For edgings of shrubbery borders, or for pot culture, plants of this dwarf strain are admirably adapted; and they are also well suited for small gardens in towns.

Richardia albo-maculata.—Grown in groups in deep, rich soil, this plant produces a fine effect. It should be planted early in spring, and, if in a light, sunny position, its leaves will become large and finely spotted, and from good roots flowers will be produced freely. After the leaves have died down in autumn the roots should be lifted and stored in sand or dry soil in a shed or cellar. If wanted for pots a few roots may be started when required; they force well and make excellent window plants. Market growers are paying attention to its culture, and it will soon be as plentiful as the green-leaved form.

Tigridia grandiflora at Tooting.—The most brilliant display of colour we have seen for some time may now be found in Mr. Barr's nursery at Tooting, in the shape of six or seven large beds containing upwards of 2000 bulbs of this showy plant. These bulbs were planted about two months ago in rich, well-drained, sandy soil, slightly shaded from sunshine by tall, round-headed Acacias. They have been in bloom for several weeks past, and are remarkably strong and healthy, the flower-spikes being from 2 ft. to 3 ft. high, and each bearing from four to seven buds and blossoms. As is well known, a flower of Tigridia, when fully expanded, does not last more than twenty-four hours, but fresh buds open daily on the same stalk, and thus a succession of bloom is maintained. Planted in groups, this charming plant would afford a display of flowers for at least six or eight weeks; and, if associated with white Lilies, Gladioli, and similar bulbous plants now in bloom, a striking effect would be the result. Although the flowers of this Tigridia are useless in a cut state, if gathered when fully expanded, they may, if desired, be cut whilst in bud, and if the stalks be then immersed in water every flower will open perfectly. Some of the blossoms on the plants at Tooting measure more than 6 in. across, from the point of one petal to that of the other. Some of the petals are 3 in. broad, and of the most brilliant colour imaginable. After flowering has ceased and the plants have died down, it is advisable to lift the bulbs and store them away in dry soil or sand in a shed, as, if left in the ground, they are liable to perish during cold, wet winters, and especially is this the case where the soil is not sandy and light, and thoroughly drained.

Clematis Henryi.—This is the best of the white-flowered Clematises of the lanuginosa type. It is a very free grower and an abundant bloomer, the flowers being of fine form and of satiny whiteness. It grows and flowers luxuriantly, rambling over dead tree stumps in Mr. Parker's nursery, Tooting.

Cattleya Eldorado var.—A plant of a variety of Cattleya Eldorado has been in bloom in the Pine-apple Nursery for over six weeks. The flower is of a clear but peculiarly woolly-looking white, with a white lip and an orange throat. It is a lovely variety and very sweet-scented.—S.

Saccolabium Blumei majus.—A fine variety of this beautiful Orchid is now in flower in Messrs. Veitch's nursery at Chelsea. Its flower-spikes are very large, as are also the individual flowers which, singularly enough, first expand at the extremities of the drooping spikes and gradually open upwards.

Begonia Queen of the Whites.—This blooms as freely as any Begonia in cultivation. Its flowers are of snowy whiteness, and withstand heavy rains with little or no injury. Being of the Veitchi type, it is a dwarf grower, and will be valuable for planting in small beds or for edging, and its flowers when in a cut state would be useful in floral decorations.

Tropæolum Hunteri.—A remarkably dwarf bedding Tropæolum now growing in Messrs. Veitch's nursery bears this name. It is not more than 3 in. or 4 in. high, plant and flowers included, and it forms itself into a compact mound of small green leaves and brilliant scarlet blossoms. It is well adapted for edgings to small beds, or it might almost be used in carpet gardening.

Gardens Open to the Public.—During last week the gardens at Englefield, near Reading, the residence of Mr. R. Benyon, and those at Dogmersfield, the seat of Sir Henry Mildmay, besides those at Heckfield, were thrown open to the public, and were visited by large numbers of persons, all of whom were greatly pleased with the treats thus afforded them. The very slight inconvenience which attaches to the privilege might well encourage many others to go and do likewise.—A. D.

Hardy Flowers at Tottenham.—The best hardy flowers now in bloom in Mr. Ware's nursery are: Armeria mauritanica, which is distinct in leaf from any other Thrift, and flowers well during autumn; Orobus lathyroides is very pretty, and groups of established plants of Lobelia syphilitica, which have attained a height of 3 ft. or more, are masses of blue. A rose-coloured variety is also in flower. Senecio pulcher is very fine just now, the flowers being large and bright in colour. Campanula autumnalis is a sheet of blossom, and C. Van Houttei bears numerous large drooping blue blossoms. Large specimens of Helianthus rigidus are remarkably showy; as are also groups of the new herbaceous Veronica Hendersoni. Sparaxis pulcherrima is in flower, also S. atropurpurea; the latter appears to flower the strongest and best, and it reproduces itself freely from seed, abundance of young plants springing up all round the old stools. Trollius Fortunei, one of the best of the Globe flowers, bears very bright golden blossoms. Tritoma Macowani is in good flower, also Spigelia marilandica; large breadths of seedling Delphiniums, Pentstemons, and Antirrhinums are likewise very attractive.

The district of Brie Comte Robert, the great Rose-growing district near Paris, sent a wreath of several thousand Roses to the ceremony in honour of the memory of M. Thiers in Nôtre Dame lately.

Our good friend and correspondent, Mr. Charles Moore, of the Botanic Gardens, Sydney, and brother of Dr. Moore, Glasnevin, has, we learn, just been made vice-president of the Royal Society of New South Wales in the place of the late Rev. W. B. Clarke, the distinguished geologist.

The Pelargonium Society held its fourth annual meeting the other day at Chiswick, when the usual formal business was transacted. Sundry modifications were made in the prize schedule for 1879, with the view of inducing wider competition amongst the members; and it was determined to award certificates of merit for deserving novelties produced at the shows. The balance sheet presents a satisfactory view of the Society's financial position, showing a balance in hand of £64, after expending £78 in prizes and about £8 in necessary expenses.

NOTES FROM KEW.

Hardy Shrubs.—Conspicuous among shrubs at the present time is the broad-leaved, deciduous Spindle tree (Euonymus latifolius); it has fine bold foliage and large, magnificent red fruits; it is a native of Eastern Europe, and is probably the finest of the deciduous kinds. Escallonia montevidensis is a handsome shrub with neat, glossy, dark green leaves, and panicles of white flowers. Hydrangea paniculata and its variety grandiflora are among the finest of autumn-flowering shrubs. Both—although excellent conservatory plants—do remarkably well in the open border, and the blossoms assume a reddish tinge, which is very pleasing. Cneorum tricoccum, from the Mediterranean region, is a pretty plant with small, bright yellow blossoms and dark green, Box-like leaves. For sunny spots on the rockery and the open border this charming little shrub is well adapted.

Hardy Ornamental Grasses.—The South European Erianthus strictus is a noble sort with fine bold leaves—the midribs of which are whitish—and tall flower-stems 6 ft. or more in height; the upright panicles, reddish-brown in colour, contrast well with the glossy leaves. Sorghum halepense, another tall-growing and elegant Grass from the south of Europe, attains a height fully equal to that of the last-named, and for spots were bold and striking, yet at the same time graceful, effects are desired, both this and the last-named are most suitable. Eulalia japonica is a kind with Reed-like habit and rather dark green leaves. E. japonica variegata is very handsomely variegated with white, and E. japonica zebrina is a most peculiar variety with somewhat light green leaves, the variegation running across them in a strange way, and not along them as in E. japonica variegata. All are natives of Japan, and are valuable decorative plants. Panicum bulbosum, from Mexico, is a light and airy Grass, attaining a height of about 5 ft., and P. virgatum is a somewhat similar kind about 3 ft. high; these two have narrow, upright leaves, and are very elegant plants. Gymnothrix japonica, about 2 ft. high, is a highly ornamental sort with bottle, brush-like spikes about 4 in. or more in length, and narrow, upright foliage, green on the upper surface and glaucous beneath. Andropogon furcatus, from North America, grows about 5 ft. high; the forked inflorescence is more curious than beautiful, but the arching leaves on the tall flower-stems are very graceful.

Hardy Herbaceous Plants.—Kniphofia sarmentosa, a rare Cape plant, has channelled, glaucous leaves and a stout scape 2 ft. high, bearing numerous, Aloe-like blossoms, salmon-coloured tipped with green; these stand out horizontally instead of drooping, as in nearly all the other species. It is also much unlike them in its manner of growth; the long, creeping stems it throws out just below the surface of the ground affording a ready means of propagation. Peganum Harmala—a South European member of the Rue family—grows about 3 ft. high, has cut leaves and large, whitish flowers. It is more curious than ornamental. Lythrum flexuosum, about 1 ft. high, has slender branches clothed with lovely rose-coloured, white-centred blossoms. Mabalus asper, a North American perennial, has Grass-like leaves and a long spike of small, purplish flower-heads. Neja gracilis, a Mexican Composite, and N. falcata, a South American sort, are elegant plants with needle-like leaves more or less clothed with silky hairs, and fine, showy, golden-yellow blossoms; the former attains the height of about 1 ft., the other grows rather taller. Polygonum Brunonis, a native of the Himalayas, about 12 in. or 18 in. high, is a very floriferous perennial; the colour of its spikes of flowers varies from light to dark red. A very striking perennial is Vernonia noveboracensis, from the United States; it is 7 ft. or 8 ft. high, and the large heads of bright purple flowers are exceedingly handsome. Lepachys pinnata, also from the United States, has Rudbeckia-like blossoms, the light yellow ray-florets being much deflexed; it grows about 4 ft. high. Tagetes lucida, a charming perennial, 2 ft. high, has bright green, finely-toothed leaves and innumerable small heads of bright yellow blossoms. Helianthus mollis and H. divaricatus, are two fine kinds of Sunflower; both hail from the United States. The first has softly-hairy, roundish leaves and large yellow, somewhat cup-shaped flower-heads; the second is double the height of H. mollis, has longer, narrower leaves and softer yellow flowers. Scabiosa gramuntia, a neat, dwarf-growing South European Scabious, has pretty blue flowers and finely-cut leaves.

Greenhouse Plants.—Albuca juncifolia, from the Cape of Good Hope, is a pretty bulbous plant; from the tuft of Rush-like leaves springs a flower-stem bearing an upright panicle of pendulous, greenish-yellow blossoms. Daphne papyracea, a Himalayan species, has pretty pure white flowers and is very interesting, as being a kind affording paper fibre. In North-western India Daphne paper is in common use for all important documents, and is extremely strong and durable.

Stove Plants.—Bilbergia pyramidalis and B. splendens are handsome Bromeliads of easy culture; both have bright scarlet bracts and blue-tipped blossoms of nearly the same colour. As a rafter plant, Adenocalymna nitidum makes a fine object; it belongs to the Bignonia family, has leaves made up of three-stalked leaflets and large, handsome, yellow Allamanda-like flowers.—†

ORCHIS MACULATA SUPERBA.

ALLOW me to say, in answer to "Salmoniceps" (p. 200), that in 1877 the average length of spike of Orchis maculata superba (the Kilmarnock variety), in a bed of seventy-two, was 7 in. Some were 15 in. in height, with over 9 in. (not 10 in.) of inflorescens. This year I was from home, and did not see them at their best; but, as the whole stock was lifted in 1877, we knew that the spikes would not be so fine as they had hitherto been. The bed this hot season would have been the better for a mulching, or, what we find best, stones placed between the plants, any mulching used here simply being an encouragement for birds to rummage amongst it. I saw Orchis latifolia at Kew in grand condition last July, and as I very much wish to have this species, I would gladly exchange with any of your correspondents three O. maculata superba for one O. latifolia (flowering bulbs). Comparisons are odious, particularly where plants are concerned, but I can never understand why O. foliosa is considered so very superior to O. maculata superba. Here the bed and rows of the latter are far above O. foliosa, which does not stand up in the stout, firm way in which O. maculata superba does. A bed of this last is faultless; no staking is required, and the stones protect the leaves and flowers from being bespattered with rain and the bulbs from the sun. From the first peeping through the ground the extra dark markings of the leaves of the Kilmarnock Orchis make the bed an attractive one for weeks before the flowers make their appearance. One word more. Why is this Orchis called maculata superba? for so it is known in the nurseries here, and some affirm that it is a distinct species. My own impression has always been that it was a selected plant picked up wild. Oddly enough, I asked no questions when, sixteen years ago, I carried off then and there our original clump (some six or seven bulbs) from the little fourth-rate nursery market garden at Kilmarnock. We grow no other O. maculata, and from that original clump hundreds have been raised. My practice is always to cut off the inflorescens merely (not a leaf or inch of stalk) when it is past its best. Is this wise? That it is not the practice of other growers I see, and I am always asked why I do it. To strengthen the bulb is my answer; and, unless we want to save seed of any bulb, is it not a good practice? Lilies are an exception; in their case I gather from the recent discussions that it would be "love's labours lost." F. J. HOPE.

Wardie Lodge.

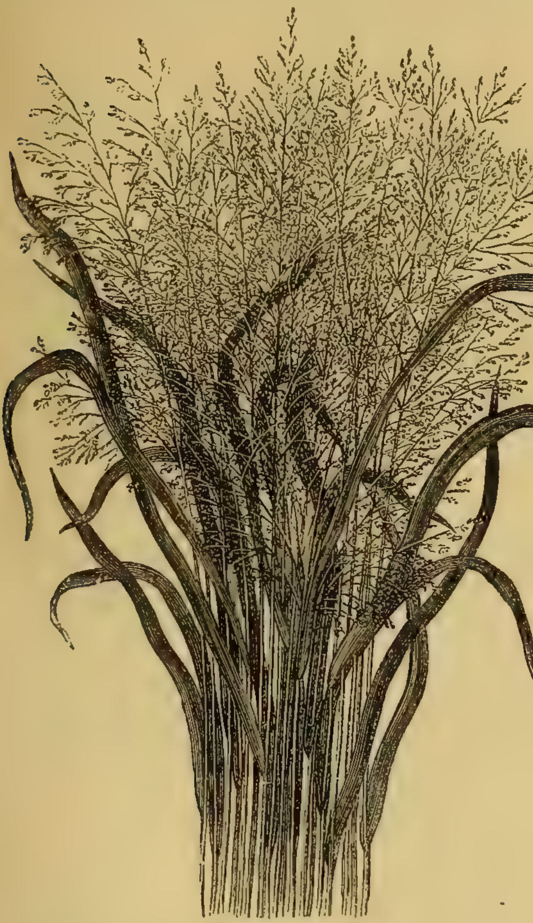
The Limes at Tor Abbey.—The allusion to the Limes at Torquay (p. 170) induces me to state that the Lime has one great defect, viz., that of shedding its foliage very early in the autumn. Some trees in this locality (Colchester) were nearly bare on August 3, partly, perhaps, owing to the drought; but at the present date numbers are leafless, and those which retain their foliage are deplorably rusty. This I consider a very grave objection to the Lime, as nothing gives such a drear and wintery look to the view as leafless trees; and about Tor Abbey they are so numerous, as to give an appearance of winter at least six or eight weeks in advance of its legitimate season. In warm weather, again, I think the Lime suffers more than any other tree from "honey-dew," and such an exudation must surely prove detrimental to the health of the tree. In addition, too, to this defect, the foliage is, from its pleasant taste, I suppose, the favourite food of the cockchafer; so much so, that young Limes planted in the Abbey field here were completely stripped of their foliage last year by these pests.—LONDON STONE.

Fruit at the Paris Exhibition.—Senator Krantz, General Commissioner for the International Exhibition in Paris has issued the following circular:—"Many exhibitors and horticultural societies have expressed a desire that the exhibition of fruits announced to take place on October 1 should be held on September 16 instead; the demands for admission already received for productions of this nature are so numerous that, without doubt, the exhibition of fruits will be a most important one, and will require much space. Consequently, it has been decided that there will be two shows—the first to commence on September 16, and the second one on October 1; each show to last for fifteen days. Fruits from the south and centre of France, as well as those from other southern countries of Europe, can be exhibited during the first fifteen days, while fruits from the North can be brought to the International Exhibition on October 1. By this means satisfaction will be given to all interested in the matter."

THE FLOWER GARDEN.

AN ORNAMENTAL GRASS.

A FEW years ago, as we ("American Agriculturist") were at the establishment of a florist who is noted for the great variety of his collections, and for trying whatever is offered abroad, the proprietor directed attention to a clump of Grass by the road-side, and asked what it was. Upon our informing him that it was Panicum virgatum, he uttered an exclamation of surprise, and then informed us that, seeing this Grass highly praised in England, he had that morning ordered a quantity of it; fortunately the letter had not been posted, and he was saved the mortification of finding that he had imported a plant which grew in abundance at his own gate. Many cannot see the beauty of native plants until it is pointed out to them by Europeans, but we will do the florist in question the justice to say that the Grass had already attracted his attention, and it was on account of its ornamental character that he was desirous of knowing its name. The genus Panicum includes the common Crab Grass, so troublesome as a weed, the coarse Barn-yard Grass, the Old-witch Grass, which in autumn rolls itself into great heaps in the fence corners, and several others, which are far from attractive in appearance. The Panicum virgatum is not only the handsomest, but it is the tallest of our northern species. It is found in Southern New England and New York, near the coast, and farther south it is common, especially in poor and sandy localities. It is a perennial, and forms large clumps 3 ft. to 5 ft. high, presenting a mass of lively green foliage, surmounted by numerous flower-panicles. The flowers appear in August, the panicles at first being narrow, but as the seeds ripen, their branches spread, and give the whole plant a highly ornamental appearance, which continues until after hard frosts. In describing Grasses, terms are used with which those who understand the structure of ordinary flowers are not familiar, so, instead of giving a technical description, we furnish an engraving, which shows the general aspect of the Grass, and will enable it to be recognised. Large clumps may be removed from their native localities to the garden, and flourish fairly, but better plants may be had by subdividing a clump, and planting out small bits of the mass; these will soon increase and form more vigorous plants than where large bunches are transplanted. This Grass may be used with good effect in sub-tropical groups, and in contrast with the Arundos, and other tall-growing Grasses.



Panicum virgatum.

HERBACEOUS PLANTS IN 1878.

THOSE who have the good fortune to possess a collection of these will this year have reason to be well satisfied, for, while the tender summer garden plants were slow in furnishing the beds, herbaceous plants flourished amazingly during the cold and continuous wet, and have been in great beauty. This has been especially the case with Phloxes, the various kinds of Spiræas, Delphiniums, &c., and now the showy Anemone japonica and its white variety are just coming into bloom, and will continue to afford masses of their lovely, salver-shaped flowers till destroyed by frost. These Anemones are so valuable as to be deserving a place in any border, however select, but, having once planted them, they should be undisturbed, as any digging about them or other interference with their roots greatly detracts from their strength and vigour. Plants of this character, that stand a long time in the same position, should have the soil well prepared for them previous to planting, which may be done by breaking it up to the depth of 2 ft. or so, and working in at the bottom a heavy dressing of thoroughly decomposed manure. Managed in this way, their roots have room and freedom to ramify, and, as they can find plenty to feed on below, they strike down and are then independent of the weather. Any one who may not happen to have them in this happy position will find that the best thing to do with them now is to mulch them with Cocoa-nut fibre or some other material that will not be objectionable in appearance, and, having done this, then give them an occasional soaking with liquid manure, the effect of which will be to greatly increase the size, quantity, and quality of the flowers. In dry, hungry soils it is as much as they can do to struggle on just at this season; and without help of some kind, when their energies are being so much taxed, red spider generally gets a hold of them and greatly impoverishes the foliage. All the different kinds of herbaceous Phloxes are much benefited by being similarly assisted, as, indeed, are most other plants of a like character, and nothing gives a better return than a little attention bestowed in this way.

One of the finest herbaceous plants with us, and one that has called forth the largest share of admiration is Bocconia cordata, a truly handsome and noble-looking plant, having elegantly cut foliage as large as that of the Fig, with the under side of a rich, shining, velvety hue, which, when seen upturned slightly by the wind, has a very striking effect. Being of a very strong growth, it is only fit for the extreme back of a border, or for planting as isolated specimens on lawns, or to grow in large clumps in semi-wild places near water, or in moist situations, for all of which purposes it is just the plant, being of a bold port and character, and therefore well adapted for such uses. Besides having fine foliage, it also bears large panicles of peculiar-looking, brownish-white flowers, that add greatly to its appearance. In spring it sends up vigorous offshoots some distance from the main crown, and if these be taken up carefully, the plant may be increased in that way. It is necessary, however, to go deep down, in order to get some fibrous roots, without which they are apt to fail on being removed. Another strikingly beautiful, although very old-fashioned, plant is the Bergamot (Monarda didyma), with its brilliant whorls of dazzling scarlet, Salvia-like flowers, that brighten up any border in which it is grown. This is a very striking perennial, of which there are also other varieties worth growing, such as the purple and the white kind, the latter contrasting well with the first-named. Where cut flowers are in great request, nothing can be more useful than Catananche bicolor. Strong plants of it send up hundreds of heads, and the blooms, being of a dry, papery-like character, are exceedingly durable in water, while their light appearance renders them very suitable for mixing with others. It is a plant, moreover, that will grow in almost any soil or situation, but does best in a deep sandy loam in an open, sunny locality. It may be increased by division just after starting into growth in spring.

In soils and situations where Alstrœmerias are found to succeed, a more useful or showy class of plants cannot be had, their large, Lily-like heads of bloom being exceedingly useful for cutting, as well as particularly showy and attractive. In order to get them to do well, however, the soil in which they are to be planted should be deeply trenched or stirred, and if at all stiff, or of a wet, retentive nature, it should have plenty of leaf-soil and sand worked into it, the tuberous roots of Alstrœmerias, when lying dormant in winter, being readily injured by stagnant moisture, which soon brings on decay. To prevent this, the best way is to thoroughly prepare the bed for them at starting by thorough drainage, as it is an operation that pays well for the labour bestowed on it, Alstrœmerias being plants that when once fairly established will last a lifetime without much care or attention. A narrow, south border along the front of a greenhouse or other similar position is the best situation for them, as there they get the protection of the wall, and from the slight warmth maintained inside are not subjected so much to the action of frost as they would be elsewhere. Being naturally deep-rooting plants, the drainage should be placed at least 2 ft. beneath the surface, and have some rough material, such as half-decomposed manure or fresh-cut turf, laid on the top to insure the interstices being kept free and open. This done, the filling in and planting may be carried out either now or at any time between this and May; but the best season is after winter is over, as then there is no risk from frost or wet, and the plants soon start away and become established. A good way in which to manage Alstrœmerias is to sow the seed where they are to remain, as of all herbaceous subjects they are the most difficult to transplant, an operation that can only be successfully performed by trenching the tubers out just as growth commences, and if they are then carefully handled, so as not to bruise or break them, most of the more fleshy portions will be found to grow. In the case of seed sowing, drills of about 1 in. deep should be drawn, in rows 1 ft. or so apart, in which, when the plants come up, they should be allowed the same distance asunder. They will soon furnish the bed or border, and make a grand display. To protect them from frost during severe weather, a slight mulching of some kind is necessary, and nothing answers the purpose better than half-decomposed leaf-soil, which is a capital non-conductor, and as neat-looking as anything that can be used.

Another plant I would specially recommend for the herbaceous border is Triteleia laxa, a most beautiful plant, resembling, when in bloom, an Agapanthus in miniature, but with flowers of a deeper, richer shade, being of a fine Tyrian purple. The present is a good time to get bulbs of this plant, which should be planted in deep loamy soil, and have some sand scattered on and around them to preserve them from excess of wet while lying dormant during winter. S. D.

PENTSTEMONS AND THEIR CULTURE.

Amongst hardy herbaceous plants suitable for culture in beds or borders few surpass these useful autumn-flowering plants. Zonal Pelargoniums suffer from heavy rains, while Pentstemons remain unimpaired. I saw a long bed of them in the Stanstead Park Nurseries a few weeks ago blooming beautifully, and looking as if they would continue in good condition until the dark days of November set in. Their great value lies in the persistent character of the flowers, which defy not only rain, but wind longer than most flowers. The flower-spikes also look well in a cut state, and are very useful indoors. At many of the autumn provincial exhibitions prizes are offered for cut spikes of Pentstemons, and useful subjects they prove for making up a stand of hardy herbaceous plants. Grown in pots they also make a very effective display. The varieties at present in cultivation do not seem to be hybrids between different species, but merely varieties of one species, though what that species is I am unable to say. It is in the colour of the flowers that the greatest variation occurs. Some of the varieties, such as Lady Coutts Lindsay, have white flowers; others are purple with variously-coloured throats, as in the case of Midhat Pacha, Mr. Fenwick, and Mrs. C. Patrick; there are scarlets, too, of various intensity, as, for example, Horace Vernet, Desilles, &c., the remaining colours being red, crimson, and rose. Their throats are usually of a pale character, marked with darker lines. Many good and distinct varieties named are annually sent from France. British raisers of Pentstemons are Messrs. Downie & Laird, of Edinburgh, and Messrs. Laing & Co., of Forest Hill.

The propagation of the Pentstemon is by no means difficult, and the same may be said with respect to its culture. The best plan is to sow the seeds, as soon as they can be obtained, in fine soil in a cold frame; the produce of a single 6-in. pot or pan will be sufficient for an ordinary garden. When the seedlings are large enough to handle, they should be pricked out into shallow boxes or pans, and afterwards planted in the beds, where they are to flower. The produce of seed sown in August or September will flower strongly the following season. The named varieties are propagated by means of cuttings taken from the plants in September, or in the north about the end of August, when they will strike root as easily as Verbenas or Calceolarias. The small succulent growths from near the base of the plants make the best cuttings. Select those that have no flower-buds on them, and cut the shoot clean across just under a pair of leaves with a sharp knife; the leaves should then be cut off close to the stem, and the cutting is ready for insertion. I use small pots, in each of which I place one variety. The pots should be set in close frames or under hand-lights, where the cuttings will soon form roots if the pots be kept well supplied with water. The glass must be shaded until the cuttings get established. When rooted they may be planted out into the beds or borders at once. What they suffer most from, in the neighbourhood of London especially, is wet in winter, combined with fog, which is so prevalent from November onwards. The best plan is to pot a plant or two of each of the choice sorts, and keep them in a cold frame. They will not suffer under such conditions, as the leaves and roots can be kept dry at a time when wet is injurious to them.

Whether the plants are grown in pots or planted out, they require a rich soil. I always trench the ground and manure it highly, using good rotten cow or stable manure, or both mixed together if such can be obtained. A layer of manure is placed about 2 ft. below the surface, and another layer about 1 ft., and besides this some rich soil is applied to the surface of the ground, in which the Pentstemons are planted. They should stand 15 in. apart. If they are grown in pots, let them be 9 in. in diameter, and one well-grown plant will fill that size full of roots by the end of the season. The method to be pursued is this: the plants that were wintered in small pots should be shifted early in March or about the end of February into 5-in. pots; when these are well filled with roots, shift into 7-in. pots, and then into the flowering pots. The potting material should consist of good fibrous loam four parts, rotten manure one part, and leaf-mould one part. All through the period of growth they will do best out-of-doors, and when the pots are filled with roots, and the flower-spikes are visible, liquid manure should be applied. The spikes, when sufficiently grown, must be supported by means of neat sticks, as they are easily broken off at their junction with the main stem. J. Douglas.

LILY CULTURE.

As I am fairly puzzled, may I be permitted to draw Mr. Wilson's attention once more to his friend's letter (p. 200). Mrs. Newall, "an old friend," writes to him about his Lilies and asks advice. Mr. Wilson says: "My advice was short—'Leave well alone.'" Mrs. Newall had written very plainly (as the reader will see), showing that her Lilies were not so well as might have been expected. He was evidently anxious about them, as it was "sixteen years since the roots were first put into the soil, and they had never been lifted since." Mrs. Newall had done everything that one could do for them, save transplanting. She says: "I protected my Lilies the first few years with straw, bark, tan, and shoddy, and in the spring with glass shades; now I lay cinders and tan over the roots during the latter part of the winter, and use no protection in spring, but I water and manure freely." Notwithstanding all this unprecedented labour and care she says: "The flowers may be a little smaller, and the plants considerably dwarfed, but I consider that they are acclimatised." The fact is, they are dwindling away for want of proper cultivation, being clubbed together, and living on one another, instead of being lifted, separated, and transplanted into fresh and better soil. As to their being acclimatised, Lilies are not perennials, and are, therefore, as much acclimatised in three years as they possibly could be in sixteen. Mrs. Newall further says: "This hot summer, with its drought, has done my plants no good, and, as the subsoil was clay, it was difficult to keep them from scorching." This is another proof of want of proper cultivation. She says: "I take as much soil off as I can every year, and heap fresh soil on them." Had she lifted and transplanted them now and then, giving them a fresh supply of rich, deep, alluvial loam, with a portion of peat or leaf-mould—spending half the time and labour underground that she has been doing above ground—she would not now have to complain of small flowers, dwarfer plants, or scorching. Mrs. Newall evidently feels that she is in a dilemma, for, in her short letter, she appeals three times for advice. She first says: "Would this have been the case had I moved them?" then: "Would you, in my case, move them?" and, lastly: "If you think it better I will remove them this autumn." To all these appeals, and without having seen the plants, Mr. Wilson returns the "short" and ambiguous answer: "Leave well alone." But they are not well, as the reader will see by Mrs. Newall's own showing. Had I been asked I would have said: By all means transplant them as soon as the bloom is over, or next year you will have even less to show. Or, better still, lift one half and replant them as I have directed, and next year you will be able to judge, by comparison, whether "leaving well alone" is good advice or not. As Lilies in general, and especially L. auratum and speciosum, mentioned by Mrs. Newall, are under artificial cultivation in this country, it will never do to put them in the ground, even in the south of England, and leave them alone to take care of themselves. In their native habitats Nature provides for them all they can possibly require; but here they must be attended to "with intelligent and loving care." Mrs. Newall, doubtless, by a very unusual mode of mulching, managed to keep her Lilies, or most of them, alive; but as the flowers are getting perceptibly smaller, and the plants considerably dwarfed, another and a better method of cultivation is absolutely required. I quite agree with Mr. Wilson that on this subject there are too many theories floating about. On the other hand, I have known that, when practical facts are placed too close to the eyes, they are apt to be overlooked and treated as mere theories, especially if they interfere with preconceived notions.

Dunedin.

—— Thanking you for the prominent place you gave to the letter on the cultivation of L. speciosum, will you allow me to say that my correspondent, the clever Lily grower, is Mrs. Henry Newall, of Hare Hill, Littleborough, near Rochdale. I have lately discovered what to me is a new virtue in Lilies. When my family are at the seaside, I am in the habit of bringing down tins of flowers, but, owing to the sea air, or gas in the room, or from some other cause, their life is a very short one. Roses and Japanese Anemones flag very much after the second day, but L. speciosum rubrum, brought down a week ago, is still beautiful. The best way to carry these Lilies so as not to lose the beauty of the stamens and pollen is, to cut the buds a little time before they open; they then take little room and open in their full beauty after their arrival.—George F. Wilson, *Heatherbank, Weybridge Heath.*

VIOLAS.

A few years ago there were not many Violas known, and the few that were then grown were never used for the purposes for which we now so extensively employ them—viz., for summer bedding. V. cornuta, blue and white, was amongst the first that were soon improved upon. Cornuta Perfection was a great advance, and is still a really good variety, possessing, as it does, good habit, sound constitution, pleasing shade of colour, and free-blooming properties. We have for several years taken a deep interest in the culture of Violas, and also in hybridising them, and no plant has given us so much real satisfaction for our labour. In the spring of 1872 we had some difficulty in getting up sufficient numbers of bedding plants with the means placed at our disposal, considering the amount required, and very insufficient material and accommodation with which to do it. The Viola family seemed to open up a possible way. A start was made, and we succeeded after a year or two in getting up stock sufficient to produce a creditable display. We likewise commenced to try to improve the varieties then existing, and also, if possible, to procure new colours. In this we were partially successful, and we are still continuing to try and get some with better habits and constitution. Before mentioning our system of propagation, &c., we may be permitted to say, that we are speaking exclusively of varieties that we consider suitable for summer bedding—viz., those that will keep up a continuous show of bloom throughout those months that we generally term our gay season from April to September. The varieties named below are such as we have thoroughly tested here, or have seen doing well elsewhere. The latter end of September and throughout October we find the best time for getting good cuttings, which in favourable localities may be put in along the bottoms of walls, or in any well-sheltered situation. Here we put them in cold frames, which in severe weather are covered over with old sashes—the remains of old Vineries. The frames are prepared by putting a few inches of well-rotted manure into them, such as that from spent hotbeds, then 2 in. of sand and leaf-mould in equal quantities. In this we have always found them to do well, and when required in spring to lift with good balls. We generally seize all favourable opportunities in March or the early part of April to get them all planted out. The beds and borders to be occupied by them get, if possible, a liberal dressing of well-decayed, old hotbed manure, pointing it in about 3 in. deep, light soils getting more than stronger loams. We have mostly worked with young plants, preferring them because they make a more even bloom, and last all the season, and the blooms are much finer in quality and colour. Where the object is to have an early display, old plants divided in autumn, or cuttings struck in July and planted in October, will be found the best. The following are a few good kinds, viz.: Light Blue—Perfection, Lottie. Dark Blue—Tory, Sir W. Scott. Straw or Pale Yellow—Grievi, Clara. Yellow or Golden—Soverign, Dickson's Golden Gem, Golden Perpetual. Dark Purple—Lady Diana, Eglintoniana, Lady Sophia. Light Reddish Purple—Ruby King. White—Lady Gertrude, Purity, Mrs. Pease. Whitish Mauve — Modesty.—John Gray, *Eglinton Castle*, in "Gardener."

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Mentha Pulegium gibraltarica.—Some of the best effects in bedding have been the result of using this lovely green plant as a carpet. Whether underneath stately forms of vegetation, or as a companion to bright-leaved Alternantheras, it is most satisfactory.—J. Groom.

Lobelia fulgens in Pots.—This, as a pot plant, may be well flowered in London. I purchased some plants in May in 2½-in. pots. Instead of transplanting into larger pots, as I had done before when I failed to flower them, I placed the 2½-in. pots in 5-in. ones, and packed the space between with Cocoa-nut fibre. The experiment succeeded well, and every plant so treated has flowered. Many plants do well when treated in the same manner. Little root room, if only the roots can be kept moist and protected from extreme heat and cold, seems to be favourable to the formation of flowers.—L. S. B.

Arundo mauritanica.—This is a fine Grass—one might describe it as a stately one were it not for its great relation A. Donax. A. mauritanica is a native of the southern shores of the Mediterranean, hardy in the neighbourhood of Paris, and reaching a height of about 4 ft.—V.

Ionopsidium acaule.—If the seeds of this pretty dwarf annual be sown in April or May, and the plants be pricked out-of-doors into beds, borders, or on rockwork, they will form a close carpet of pale lavender flowers, not unlike those of the much esteemed Houstonia cœrulea, all through the summer.—S.

Epilobium hirsutum variegatum.—This makes an excellent edging plant for shrubberies, or if kept pinched in it would make a good plant for ribbon or pattern gardening. In open, sunny situations its leaves assume a bright cream colour, but in half-shady places the plants grow more loosely and the colour is not nearly so good. It is used extensively in some of the London parks this year and with good effect.—S.

Erythræa Muhlenbergi.—A finer annual than this would be difficult to find. It is neat in habit and grows about 8 in. high, producing many slender branches. It is very floriferous, the blossoms measuring 3½ in. across, with five spreading divisions of a deep pink colour and a greenish-white star in the centre. To grow it well, seeds should be sown now and grown under liberal treatment till the spring; they will then flower much earlier and finer than spring-sown plants.—W.

Verbena venosa Sown in Autumn.—Since the ordinary varieties of Verbena have almost disappeared from flower gardens the peculiar colour afforded by this sort (a bluish-violet) has been more than ever valuable, not only for furnishing whole beds with that particular shade, but more especially from the good effect produced by it in mixed beds, as, for instance, associated with variegated-leaved Pelargoniums, such as P. Manglesi, &c. Its wiry, upright habit of growth, not exceeding 18 in. in height, renders it a suitable plant for many combinations. It will survive the winter out-of-doors in dry, warm soils, and if lifted and placed in gentle heat abundance of cuttings may be procured in spring that will strike freely. If, however, a large quantity of good, hardy, bushy plants be required, the best plan is to procure seed of it and sow it in shallow boxes in autumn, and, by keeping the seedlings in a cool house or pit during winter, dwarf, bushy plants in abundance may be secured by ordinary planting time in May.—J. Groom.

Physostegia imbricata.—Bunches of this handsome perennial formed a conspicuous feature on a stand of hardy flowers staged at a recent floral exhibition at Reading. The flowers resemble at first sight those of a Heath; they are of a pale, rosy-purple colour, the tips being of a paler hue, almost white; they are borne on spikes, which attain a great size on well-established plants. A strong plant, if grown in a rich, sandy loam, would grow to a height of 5 ft. or 6 ft., and it should, therefore, be planted at the back of the mixed border.—D.

Saxifraga leucanthemifolia.—Walking one morning last May near the village of Pierfitte, in the Bas Pyrenees, I came to the base of some precipitous rocks considerably overhanging my path, forming quite a cave, the shady side of which was covered with a Saxifrage in full flower growing in the narrow crevices of the rocks. Upon examining the plant I discovered it to be the rare S. leucanthemifolia of Lapeyrouse, and I believe, from enquiries since made, that it is the only locality in the Pyrenees in which this plant is found. It is totally different from any other Saxifrage, coming nearest to S. rotundifolia than any other I know of. The name is a familiar one in catalogues, but I believe the true plant is not in cultivation. It is a handsome species, the branching panicle assuming a pyramidal outline. The flowers are white, with orange stamens, and are produced in great abundance. Some of the plants were 1 ft. in height, growing apparently on the bare surface of the rocks. I collected a few and brought them home, and they are now flowering a second time.—P.

Bouquet or Pompone Dahlias.—During these last few years this section of the Dahlia family has become very popular; the blooms being small and compact, resembling a Ranunculus more than those of a Dahlia, makes them much more serviceable in cut-flower decoration than those of ordinary border Dahlias. I have also found them most effective as a background in mixed borders or for large beds in shrubbery grounds. The roots, left in the open ground all winter, are quite safe if a good coating of coal-ashes be put over them when the tops are cut down. If lifted for purposes of propagation they may be safely stored in any cool shed secure from frost, and, if covered with any partially dry material, such as old tan, Cocoa-nut fibre, or leaf-mould, they will start more strongly into growth than if over-dried by exposure to the atmosphere. At this season the flowers are especially useful in floral decorations of a large character, where delicate or fragile blossoms are not nearly so effective; and the Dahlia, moreover, will last in a perfectly fresh condition for some length of time, even without inserting its stalks in water—a great gain where, as in the case of harvest festivals, school treats, &c., the decorations have to be extemporised without having recourse to the best preservatives. I have found the following varieties all that could be desired, viz.: Angel of Peace, Bessie, Bijou, Crimson Beauty, Fireball, floribunda, Glow-worm, Golden Canary, Jubilee, Little Bobby, Little Darling, Little Dear, Little Helen, Little Nigger, Little Snowball, Pearl of Lilliputs, Prince of Wales, Pure Love, Sacramento, Sappho, Seraph, Sunshine, Tomtit, and Voltaire.—J. Groom.

Phloxes in Lines and Masses.—Those who have cultivated the Phlox in the shape of single plants in mixed borders, and who have not had an opportunity of seeing them planted in masses of distinct colours or in long lines of one variety, can scarcely conceive how exceedingly effective they are when thus planted. Pelargoniums and other tender plants, so commonly met with in beds and ribbon borders, have but a poor effect when compared with a ribbon border or beds of some of the fine Phloxes now in cultivation. If half the labour were bestowed on our brilliant autumnal Phloxes that is bestowed on some of the tender plants of the day, our gardens would have a much more massive and brilliant effect. Of course reference is now made to the autumnal varieties of Phloxes, which come into bloom in August and last till October. Let any one who wants a hardy and brilliant ribbon border take—1, Phlox Lothair, salmon, shaded with violet; 2, P. Mons. Henricque, brilliant reddish-crimson; 3, P. Venus, pure white; 4, P. Mons. Guldenschugh, rosy-violet; 5, P. Spenceri, dark rosy-lilac. These give five lines sufficient for a 10-ft. border, and ranging in height from Spenceri 15 in. to Lothair 4½ ft. An excellent front edging for this border is the variegated Periwinkle. In order to grow these thoroughly well, and so as to insure a lengthened period of blooming, the ground should be deeply trenched and well enriched with good manure from the farmyard, and not more than six heads of bloom should be allowed to each stool. Thus treated, when planted in long lines, it is difficult to convey an impression of these and similar varieties.—"The Gardener."

THE OLD YELLOW PROVENCE ROSE (R. SULPHUREA) AND ROSE CULTURE IN PORTUGAL.

Mr. D. T. Fish asks (p. 75) for information regarding the culture of this fine old Rose. I have not tried it on the Brier or the Manetti, because it grows like a Bramble on its own roots in this country; in fact, the only difficulty is to keep it within bounds, as it sends up suckers in profusion. It certainly is very capricious as regards flowering, but the perfect flowers, of which we get good specimens every season, are, as Mr. Fish says, remarkably beautiful. If Mr. Fish should meet with any difficulty in procuring plants on their own roots, I shall be happy to send him a bundle of them next November, and as to culture, I should say, trench and manure the ground (medium soil, that is not too heavy) well, and plant in some snug, sheltered, warm corner. Avoid pruning; if there be too many shoots, cut out some of them altogether, and grub up the suckers, unless they are wanted to fill up vacant spaces. Do not shade from the sun, but mulch and let them have water during hot summer weather. It is quite useless to expect this Rose to flourish anywhere near towns; it requires pure country air. *A propos* of Roses on their own roots, from what I read in The Garden, and in the new editions of the various books on Rose culture, it strikes me a tide is setting in in favour of Roses on their own roots. I have long since come to the conclusion that they are the best for our climate. One has to wait longer for a return of fine flowers, but once the plant is established it lasts for ever, so to say, and its aspect is more natural, and therefore preferable to that of worked specimens. All, or almost all, Roses grow from cuttings planted in the open air in November, and they are fit to plant out the next autumn. Even the common Moss will strike root in this way, but with some difficulty. Still, budding must be resorted to; we are all in such a hurry to see what new Roses are like. The question is, which is the best stock? Briers do not do at all in this climate. Our scorching summer sun plays the "two in whist" (as Canon Hole says in his charming book on Roses) with them. The Manetti does pretty well budded so low down that, without burying the roots too much, you can keep the budded part 2 in. below the surface. They then are in appearance on their own roots, and I believe very often actually become so. However, we have a wild Rose in the north of this country which quite satisfies our wants, and has completely superseded both Briar and Manetti. It throws up no suckers, and the buds on the stock are less apt to shoot forth than those on the Manetti. The growth of the budded Rose on this stock is marvellously strong and healthy, and the stock itself increases in proportion. This stock was discovered and introduced by M. Loureiro, an enterprising nurseryman of Oporto, already well known in France and Belgium as the raiser of many fine seedling Camellias. I cannot say to what species of Rose it belongs, but if Mr. Fish or any of your readers would like to judge for themselves, I can place at their disposal a limited number of young plants. They merely require being planted in some out-of-the-way corner; when established prune severely, and they will produce long, stout shoots, which must be made into cuttings about 12 in. long and planted in the autumn. They will be ready to be budded the following summer. We work them just as one would a Brier—that is, cut off all the new shoots with the exception of one or two (I prefer one) of the best, and bud them.

M. Loureiro finds that R. sulphurea succeeds very well on this stock. For climbing Roses we have the Banksian, the best stock possible for the purpose, particularly if worked on Rivers' plan—first Gloire de Dijon on the Banksian, and then the kind you want on Gloire de Dijon. The result with such Roses as Maréchal Niel, Belle de Bordeaux, Cheshunt Hybrid, Rêve d'Or, Mdme. Berard, and such like is admirable. C. T.

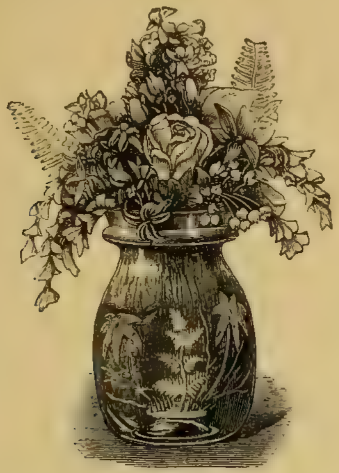
Lisbon.

Button-hole Roses.—I notice (p. 175) that "A. D." has a word of praise for Catherine Mermet. It deserves all he says of it; but my two favourite button-hole Roses for the autumn are Celine Forestier, soft primrose, and Boule de Neige, pure white, occasionally slightly tinged with pink on the outside of the petals. These two are perfect in size, form, colour, fragrance, and staying powers, exceeding in the latter valuable qualities almost any or all other Roses.—D. T. Fish.

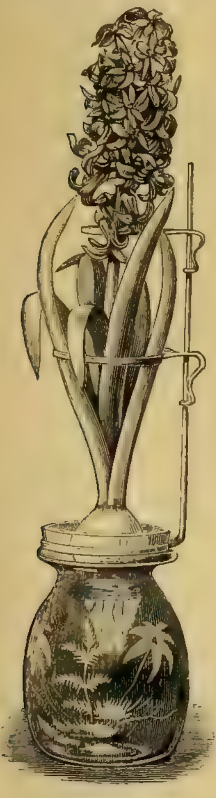
THE INDOOR GARDEN.

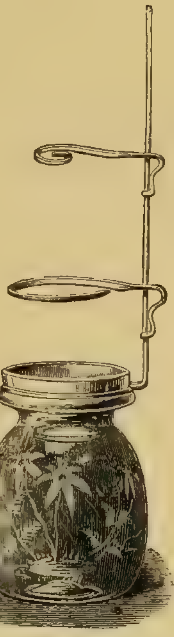
HYACINTH GLASSES.

Messrs. Stevens & Williams, Brierley Hill, Staffordshire, send us specimens of their new Hyacinth and flower glasses, which are fairly well adapted for holding flowers when not in use for Hyacinths.



They are engraved with Fern leaves. We are not sure that it would not in such cases be better not to bring ordinary glass-engraving in competition with the living flowers. In any case it would be well to offer these glasses plain as well as engraved. We ourselves should greatly prefer them plain. It is much to be desired that some spirited firm would make and introduce to the gardening trade generally some of the good forms of vases in green, blue, and other colours for holding cut flowers. These may be obtained of some of the good "artistic" house decorators, but at prohibitive prices.





AURICULAS IN SEPTEMBER.

So far, the season has been highly favourable to a fine summer growth, and late-potted plants are making a robust growth, and strong-growing varieties, like C. J. Perry, Robert Trail, Lycurgus, Lord Palmerston, Mrs. Smith, Black Prince, Lord of Lorne, Maclean's Unique, Richard Headly, Imperator, White Rival, Colonel Champneys, Duke of Cambridge, and Mrs. Sturrock, have, what has been termed, a "cabbagy" appearance so vigorous do they look. The dull, cool, moist weather suits Auriculas properly housed in a frame and protected from heavy rains. Very little water has to be given, but green fly has to be kept under, decaying foliage removed, and any other insect pests got rid of summarily. A small green caterpillar is troublesome this season, and if it gets into a plant it soon shows traces of rare predatory activity. I suppose there is such a plethora of insect food this summer, that the birds cannot feast on them fast enough, that is, supposing they are the insect feeders some have represented them to be. Occasional stirrings of the surface are also very necessary to keep the surface soil open and prevent sourness. When the weather is sunny and drying, I let a gentle shower fall on the plants, but nothing in the character of heavy rain. For lack of frame accommodation, I was obliged to place a few plants each of Robert Trail, Mrs. Smith, and General Neill in the open air on a cool border without any protection from heavy rains, and, notwithstanding the excess of moisture, they have made a very fine growth. Some strong seedlings of fair character, similarly treated, have also grown famously. The pots are standing on a well-drained ash bottom and the water quickly passes away. By the middle and end of September the fine summer foliage of the plants will begin to decay. This is simply the operation of a natural law, and the least experienced cultivator need not be alarmed about it; and if the autumn keeps fine and open, the decay of the summer foliage will be succeeded by a fine, healthy, but less gross leafage. As Auriculas are generally pretty active during September, it is necessary a due share of water be regularly supplied while drying influences are about; the needful supply of water depends on the state of the weather and the condition of the plants. Weakly plants should be watered with great care and only when absolutely necessary. The pots in which the plants are growing should be kept clean, and, as before recommended, the surface soil should be kept slightly stirred. The dull close weather is in favour of green fly abounding. An occasional fumigation with Tobacco smoke is the best remedy, and if it be not convenient to do this, it is well to brush the leaves with a soft camel's-hair brush. In stirring the surface soil, the operator should be careful not to lay bare any of the roots. Some of the Auriculas throw up their roots to the surface almost before they make any lateral or downward root development; and all the more care is necessary that they be not disturbed. A little soil should be added in the case of roots so displaying themselves. In all probability the strong growth now being made will excite the plants to flower. It is not uncommon for Auriculas to throw up autumn trusses, and there is reason to think that (for the reason above stated) they will be more plentiful than usual this season. Some sorts have already commenced to do this, and, if any such plants are wanted for exhibition next spring, it will be best to allow the stem to rise out of the heart, and then carefully rub off the buds, leaving the stem uninjured; by this treatment the flow of vigour in this direction will be arrested, the stem will very slowly dry off, and die away without injury to the plants; but it will sometimes happen, if the stem be pinched off near to the bottom, it will rot down to the leaves and peril the safety of the plant. It is a good plan to sow Auricula seed as soon as it is ripe. Last spring was a bad seed season, but a few fertilised pods swelled here and there, and as soon as the seed was ready it was sown. Several seeds have already germinated, and more will follow in succession for a few months to come. By sowing as soon as the seed is ripe a season is almost gained. It is best to sow thinly and leave the plants in the seed pots till early spring, and then prick them out round the sides of smaller pots to encourage them to grow into size. By the autumn the foremost plants will in many cases be strong enough to blossom, and show something of their probable character.

A 6-in. pot is well adapted for Auricula seed. The pots should be nearly one-third filled with crocks, and over these a little coarse soil should be laid before the fine soil is added. A good seed soil is made up of finely-sifted loam, leaf-mould, and some finely-powdered charcoal. This should be put into the pots till within ¾ in. of the rim, then pressed down gently till level, and the seed thinly spread over it; then the seed should be pressed into the soil, a piece of glass placed over each pot, and then put away in a cool, shady part of the Auricula house or frame, shading from the sun as requisite. If the soil be used a little moist, no water will be required for a few days, but it is best to keep the soil in the seed pots fairly damp. If it gets dry, it is a good plan to place the pots in water up to the level of the soil, and allow it to rise in the soil, and gradually moisten the whole. There is a great amount of interest attaching to the raising of seedling Auriculas, especially when the seed is saved from choice flowers, but there are cases in which fine varieties have originated as chance seedlings. D.

MUSSÆNDA FRONDOSA.

This singular and beautiful plant belongs to a somewhat restricted family of evergreen shrubs, mostly from hot countries in both the Old and New World. This species is much the handsomest of the genus, and is not like any other plant in cultivation. It produces bright yellow flowers, borne in bunches in form not unlike the well-known Pentas carnea, but individually smaller. Yet it is not in the flowers alone in which its beauty consists, but in the large floral bracts or pair of coloured leaves, pure white, that are produced immediately at the base of each bunch of flowers. In size and shape they are similar to the ordinary leaves borne by the plant, but are not persistent, longer than the flowers, which will last three weeks in perfection. The plant is easily managed, and does not require a great deal of room, a large specimen rarely attaining more than from 2 ft. to 2½ ft. in diameter. Its disposition to bloom is remarkably free, as even small examples, consisting of a shoot or two, will flower. The singular combination in colour produced by the pale green of the leaves and the white bracts which, when found on a well-grown example, cover half the surface, and the bright yellow flowers rising immediately above them is at once beautiful and wholly distinct from everything else—so much so as to create surprise that the plant is not more generally cultivated, either by those whose heated glass accommodation is limited, for which the little room it occupies adapts it, or by those who have large stoves or warm conservatories, where a few moderate-sized examples dotted about offer a perfect contrast to the other occupants. It is as readily struck as a Pelargonium; cuttings made of the green, half-ripened shoots taken off with about three joints, removing the bottom pair of leaves, will root in a few weeks inserted singly in small pots, drained and filled with a mixture of half-sifted loam, to which an equal quantity of sand has been added, with a thin layer of sand on the surface, covered with a bell-glass, kept moist and slightly shaded, with or without bottom-heat, in a night temperature of 65° or 70°, and a proportionate rise in the day. This heat there will be no difficulty in maintaining about the time (May), when cuttings in the condition above described will be obtainable. As soon as they are found to have formed roots give air, gradually dispensing with the glasses, so as to inure the plants to the air of the house. When they have made two pairs more leaves pinch out the points of the shoots, to induce the lower eyes to break, for although the plant is naturally inclined to assume a bushy form, yet to produce specimens that will branch out and hide the surface of the pots (in which way this and subjects of similar habit always look the best), it is necessary to stop the young plants in their first stages. As soon as they have again fairly broken into growth they will have made roots enough to require a shift; pots 2 in. or 3 in. larger will be big enough; drain sufficiently. It will succeed in either peat or loam, but I prefer the latter, as in it the growth is more robust, affording an ability when in flower during the summer to bear removal to a lower temperature than where it has been grown, a condition that I have invariably found existing to a greater extent in loam-grown, heat-requiring plants than in such as are cultivated in peat. The loam should be of a good ordinary description, containing a fair amount of good turfy matter, not broken too fine, and with enough sand added to admit of the water passing freely through it. Pot moderately firm, and keep the plants where they will be exposed to the full light with a slight shade in the middle of the day.

This plant, being found in the hot parts of India, requires a brisk heat to grow it freely. Admit a moderate quantity of air during the middle of the day, shutting up so as to enclose a considerable amount of sun-heat, syringing overhead, and at the same time maintaining a genial atmosphere. It must never be allowed to want for water in the soil, for, although not a delicate-rooted subject, and the old wood assuming a hard condition, yet the young shoots are always comparatively soft, and if allowed to flag through an insufficiency of moisture, it has a stunting effect, which limits the growth and in the same proportion the ability to flower. As growth progresses, tie up the shoots to neat sticks, inserted just within the rims of the pots, again pinching out the points about the end of July; then shift into pots 3 in. larger, after which time continue to treat as before until the beginning of September, when dispense with the shading, and by the end of the month cease syringing, giving more air, so as to gradually bring about a state of rest, to still further induce which reduce the temperature; keep through the winter about 60° in the night, and a little more in the day, with just as much water as will maintain the soil in a semi-moist state. By the end of February, raise the temperature 5° day and night, and, as soon as growth has fairly commenced, shift into pots 2 in. larger, using enough sticks to keep the shoots evenly balanced, and again commence syringing overhead. The points must not now be pinched out, as it would delay the flowering. Give proportionately more heat as the days lengthen, with a little shade when the sun is powerful. By the end of April the plants will show bloom, which will be indicated by the appearance of the coloured bracts, which will go on developing until the flowers expand. If kept in the stove they will bloom a second time towards the close of summer; consequently, I should not advise their being moved at this first flowering to cooler quarters. When done blooming do not shorten the shoots, but simply pick off the decayed bracts and flowers, at the same time giving them a good syringing. They will now bear as much heat as that given to the generality of stove plants, and will recommence growth immediately; when two or three pairs of leaves have been made, they will again show flower, which may be expected to arrive at maturity by the latter end of summer, at which time they can be moved to the warmest part of the conservatory; but whilst here, like most other stove subjects, they should not be set where they will be under the influence of external air admitted directly in contact with them. When they are in cooler quarters, give no more water than is sufficient to keep them from flagging. After the blooming is over, shorten the shoots back to about one-half the length that has been made during the season, and at once return the plants to the stove, where they will again break into growth, although not much progress will be made till spring. Winter as before, and give 2-in. or 3-in. shifts as soon as the plants are fairly in motion in spring. Treat as in the previous season. After the first flowering is over they will be considerably benefited by the application of manure water once a week. Let the autumn and winter management be similar to that previously advised, and when the time for potting in spring comes shake out a portion of the old soil, returning the plants to the same pots, which will be large enough for all ordinary purposes, replacing the old soil with new. As soon as the roots have got fairly hold of the new material, supply manure water regularly through the growing season, by which means the plants may be kept for years in a healthy condition, with simply replacing a portion of the old soil by new each spring.

Most of the insects which attack stove plants will live on this Mussænda, although they do not appear so partial to it as some things. The leaves are somewhat thin in texture, and are soon injured by the presence of red spider, but if in the syringing advised the water is got well to the undersides of the leaves, these will never gain a footing. Thrips and green fly are thus in like manner held in check, but should they make their appearance, fumigate or dip in Tobacco water. Brown scale and mealy bug, where present, must, during the growing season, be removed by brushing and sponging, and when the plants are cut in after the second flowering they should be dipped in, or well syringed with, a moderately strong solution of insecticide. T. Baines.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Two Good Carnations.—In a large collection of Tree Carnations grown in pots, in Messrs. Veitch's nursery at Chelsea, we noted two which ought to occupy a prominent place in every collection. One named Mons. Baldwin is a tall grower, and bears very large, well-formed, bright crimson flowers, which last on the plants in good condition for two or three weeks. Garibaldi is the name of the other; it is a dwarfer grower, but an equally abundant bloomer, its flowers being, 3 in. across, and of a bright scarlet.—S.

Harrison's Musk as a Window Plant.—Young plants of this in 3-in. pots, placed in a window early in spring, will continue flowering continually, if well supplied with water, until midsummer. They should then be potted into 6-in. pots, and the shoots should be carefully pegged down over the new soil; they will then go on growing and flowering until late in autumn. They require plenty of moisture at the root at all times.—J. Groom.

—— We have employed Harrison's new Musk successfully this season for decorative purposes. Early in the spring months, and even up to midsummer, we found it invaluable in pots for conservatory and house decoration. The most useful sized pot in which to grow it is a 5-in. one, using rich soil and good drainage. It requires a liberal supply of water, and occasional waterings with liquid manure are found to be of benefit to it. I have also used it largely for both beds and borders, and when planted in masses it is most satisfactory, being compact in habit and most profuse as regards bloom. Our beds of it were planted in April, and ever since the early part of May they have been a complete mass of flower. Heavy rains impair their beauty for a day or two, but they soon recover. This Musk flourishes best in a light, rich, moist soil, and if dry weather sets in occasional waterings will be necessary.—R. Greenfield, *The Priory, Warwick.*

London-grown Tuberoses.—Like "A.C." (p.210), I experienced some difficulty in growing Tuberoses, but this year I have succeeded fairly well, some of my flowers being 2½ in. long and 2 in. in diameter when expanded. The roots were planted in February, one in a 5-in. pot, plunged in bottom-heat until the pots were full of roots, and allowed to grow slowly on in the greenhouse till May, when they were put out-of-doors whenever the day was warm. Several were allowed to remain out and were well watered until the flower-buds were about to burst. They were then left to flower under glass, rendering the room or house agreeably fragrant. Mine are rather late, and several have not yet flowered; but in the heart of London plants must not be encouraged to grow too fast, as light is very defective, and this year we have had less sun than usual. With care and a little practice I think Tuberoses may be well grown in London.—L. S. B.

The Souvenir de Malmaison Carnation deserves a place in every garden where cut flowers or choice decorative plants are in request. The blooms are extremely large and of a very delicate flesh colour. Young plants are preferable for pot culture; those struck in May from soft side growths, in a brisk bottom-heat flower within twelve months. They should be potted off into 3-in. pots in a compost of fibry turf and dry cow manure, and as soon as they are well rooted transferred to cold frames, in which they are set on coal ashes, the lights being drawn off entirely on all favourable occasions. In August they should be shifted into 5-in. and 6-in. pots, great care being exercised in watering, as if at all soddened or the drainage imperfect the plants are liable to die off. Green fly must be guarded against by fumigation or the use of Tobacco water. During winter they should be kept in a light well-ventilated house with intermediate temperature. Such plants, if successfully handled throughout, develop splendid heads of blooms.

Azalea Duke of Edinburgh.—This very fine English seedling Azalea indica was raised by Mr. Parsons, gardener to Captain Blake, at Danesbury, Welwyn. It is of free-growing, vigorous habit, with healthy foliage of the usual character. The flowers are very large and stout, very smooth both on the surface and at the margin, and abundantly produced; their colour is a bright rich salmon-red, the upper side of the flower being moderately spotted with deep crimson. The solid, though not heavy, colouring, and the large size of the blossoms, place it in the first rank of ornamental varieties, since it combines effectiveness with floral qualities of a very high order. A first-class certificate was awarded to it on May 3, 1876, when it was exhibited before the floral committee, and no award of that body could be better deserved.—" Florist."

THE FRUIT GARDEN.

MAKING BORDERS FOR FRUIT TREES.

Unfortunately, the places in this country where the choicer kinds of fruit trees can be cultivated to advantage without some previous preparation of the border are few and far between; indeed, we may say, for a crop of so permanent a nature, any money judiciously laid out in deepening or improving the soil will prove, in the long run, a good investment. If every gardener were allowed full liberty of action, nearly every estate would, we believe, furnish materials for forming good and lasting fruit borders. The very light loams might be intermixed and improved with the moister and more adhesive soils from the neighbourhood of streams or ponds, as the presence of water is usually indicative of more retentive soil; and the heavy land could be made more open and porous by adding the sharp gritty parings from the sides of roads, sand, and the *débris* from old buildings. The latter substance is especially suitable for stone fruits. The cuttings, prunings, and other matters that are constantly accumulating, after being submitted to the action of smothered fire, so as to char them into a black mouldering mass, form a capital compost for lightening heavy soil for fruit trees, as it enriches at the same time that it improves its physical or mechanical condition. In dealing with heavy clays, some of it might with advantage be burnt, and the rougher portions reserved for forming foundations for the borders, and the finer particles mixed with the soil to open and improve it. Fruit trees, as a rule, do well or ill in proportion to the pains and care brought to bear upon them, especially in early life. Half the battle is won when they have received a fair start in good, healthy, suitable soil. Cultivators formerly attached more importance to this than is now the case. Most people now-a-days are seeking for short cuts to the attainment of any given object, and permanency is often lost sight of, or altogether ignored. The advice the Scottish laird—immortalised by Scott—gave to his son, "to be always sticking in a tree" was excellent in the sense in which it was given. But it would appear that it had been acted on literally in some instances in planting fruit trees; for one is constantly seeing or hearing of wall and other fruit trees being in a miserable, unhealthy condition, mainly from want of proper preparation being made for the reception of the trees before they were planted. Far too often, indeed, young trees are planted on the same sites from whence old worn-out trees of the same kinds have only just recently been removed, ignoring altogether the important matter of rotation, which it is even more necessary should be observed with a crop which, if successful, would, even at a low calculation, occupy a position profitably for a quarter of a century, or longer, if the work had been well done, and the after management of the trees had been right.

Many of the best methods of draining fruit gardens and orchards are yet capable of improvement. Land naturally porous, and indeed often too dry in summer, is not unfrequently in a water-logged condition in winter; that must, we think, be inimical to the well-doing of the trees, by retarding or altogether preventing the proper development of the delicate tissues of which the advancing flower-buds are composd. Therefore, all properly made fruit borders should have a drain along the front, with a good clear outfall that would be free in times of flood; in some gardens it would only be in times of sudden downpour in autumn or winter that the drains would be required, and in all cases the sooner all excess of water in the land is passed away the better, as it lowers its temperature so much. In preparing borders for wall trees, width, and in some measure depth, must depend upon the height of the wall. A tree that is expected to cover a large space must be allowed a correspondingly wide root-run. Thus, in most gardens, it has been the custom to allow the wall borders to have the same width as the height of the wall, and it should be over rather than under; and then the front might be cropped with dwarf-growing vegetables or salads. These borders are so valuable for early crops that they cannot be dispensed with. The practice of double cropping is not a good one, as it involves either the speedy exhaustion of the soil, or the regular and constant application of manurial matters, that have a dangerous tendency to disorganise the system of the trees; and we have no doubt the lives of many trees have been shortened by the practice, besides the lesser evil of unfruitfulness caused by exuberance of growth. September, before the autumn rains set in, is the best time to make new, or remake old fruit borders. The work can be done more expeditiously when everything works cleanly. Another and more important advantage is, it gives a period for the soil to settle before planting; and it is a great advantage for all deciduous trees to be planted by the end of November.

The proper depth for fruit borders has often been discussed, but so far as my own experience goes, coupled with what I have been able to glean from the experience of others in different parts of the country, for a tree that is expected to live to a good old age, to lead a steady, regular, and consequently a fruitful existence, not excited by stimulants, or unduly crippled by poverty through being confined too much in its feeding bed, 3 ft. may be taken as a good average depth. In some places where the subsoil is very inferior a few inches less will suffice, and the border should also be raised a few inches above the natural level. No doubt good crops of fruit have been grown in shallow borders, but in this case more care and labour are involved; and, unless there be a positive necessity through the subsoil being of a cold, wet character and the neighbourhood low and difficult to drain, a depth approaching to 3 ft. will give the best result, if lasting fruitful powers are sought in combination with fully developed trees. There are various ways of making the bottom of the borders impervious to root action, so as to keep the roots in the prepared borders. Where chalk abounds, 5 in. or 6 in. of it placed in the bottom and rammed down firmly make a the bottom with a layer of 2 in. of sifted coal ashes on good foundation; or 3 in. of tempered clay placed on top of the clay, and well kneaded and trampled in, and rolled when approaching dryness, also forms a good hard floor. A layer of concrete answers the same purpose, or the bottom may be paved with tiles or bricks laid on cement; in short, the materials that can be most easily obtained should be used in each case The bottom of the border should have a fall of 1 in. in 8 in. or 10 in. to carry off the water to the drain in front, which should be made at the same time the border is excavated, laying the pipes along its front and a few inches below its level. The soil for the different kinds of fruit will not vary much in the same locality. Peaches should have a good sound loam, neither heavy nor light, with as much fibre in it as possible, and if soil of this quality and texture cannot be had, secure the best and nearest approach to it. From 4 in. to 6 in. thick of the top of a sheep pasture is the soil sought for by the cultivator, and where success is aimed at, it is a mistake to refuse the means to do things properly. Apricots will thrive in rather a lighter soil than Peaches; and Cherries, again, thrive best in soil of a gravelly or a stony nature, rather than heavy or close. Plums, Pears, and Apples succeed very well in well-drained soils of a mellow, loamy nature. All stone fruits do best in soil of a calcareous character, and where lime is not present in sufficient quantities lime rubbish may be added in the mixing of the soil when the border is formed, or a dressing of lime may be given to the borders at any time, and lightly forked in should it be necessary.—"Field."

The Morello Cherry.—This should be freely planted where fruit for culinary or confectionary purposes is in request. If planted against a north wall it is one of the most certain cropping fruit trees that we possess; in fact, it should occupy a north aspect for several reasons, but more especially because the blossoming season is retarded in spring, and because it offers great facilities for preserving the fruit in a fresh plump condition late in autumn. The fan system of training is that best adapted to the Morello, as it offers the greatest facilities for keeping all parts of the tree stocked with young bearing wood; for, although like the Peach, Morellos will bear on spurs, I find that the young annual growths produce the finest fruits. This is a good time for selecting healthy young trained trees worked on the Mahaleb stock. Having well prepared a good position for them, carefully remove them as soon as the leaves have fallen. Do not overcrowd the wood, and keep it free from fly by means of the garden engine.—J. Groom.

PLATE CXLIV.

APHELANDRA FASCINATOR.

This is the finest of all the Aphelandras that have yet been introduced to cultivation; and not only is its inflorescence of the most brilliant description, but when not in flower its ornamental foliage renders it attractive. Like others of the genus, its spikes are terminal and four-sided, and its individual blooms are very large and of a brilliant vermilion.

Subjoined are a few of the best species in addition to that just named, and all of them deserve a place even in the smallest collections:—

Aphelandra cristata, an old inhabitant of our stoves—one, indeed, which has been turned out (in many instances) to make room for inferior plants of more recent introduction. When in good condition, its beauty is, however, always appreciated. During the autumn its four-sided spikes of membraneous bracts and bright, rich scarlet flowers are produced in great abundance, the broad, shining, deep green leaves forming a grand contrast.

A. Sinitzini.—Like Fascinator, this is a recent introduction. Its leaves, which are ovate and deep green above, with the primary veins strongly defined, are deep red on the under sides; the membraneous bracts are also red, and the large flowers are of an intensely vivid scarlet.

A. Roezli.—This is an extremely free-blooming plant, even in a small state, yielding its gay flowers in the very depth of winter. Its leaves are oblong in shape, overspread with a silvery shading, especially between the primary veins. Its flowers are bright orange-scarlet, and are produced in long terminal bracts.

A. Liboniana.—This is a rather stronger-growing plant than the preceding, and it is, moreover, a spring flowerer. Its leaves are ovate-lanceolate in shape, intensely deep green with a white mid-rib; the bracts in the spike are bright orange, the flowers being yellow tipped with scarlet.

Amongst other species we may name A. nitens, A. Leopoldi, and A. aurantiaca as being desirable where space for growing them can be afforded.

The Aphelandras are stove plants that are particularly useful in the case of those who require brightly-coloured winter flowers. They are nearly allied to the Justicias, with which, indeed, the older species were at one time associated. In order to have them bushy and well furnished with leaves down to the pot, quick growth should be encouraged by constant feeding. Where small plants only are required seedlings are best, as it is easy to grow them so as to have flowering plants the same year in which the seed is sown. If larger plants be desired, then these seedling plants should be cut back before starting them into growth, and every season this should be repeated to within two or three buds of the old wood. When well started the young growths should again be stopped, in order to increase, if possible, the number of flower-bearing shoots. If a large stock be required, cuttings taken off with what is termed a heel strike readily, and soon make flowering plants. Aphelandras require to be kept very clean; if this be not attended to, thrips, bug, and scale will soon render them unsightly. In order to keep these pests in check the most effectual application is Abyssinian mixture. The best soil for Aphelandras is a mixture of two parts loam, one part peat, and one part good leaf-mould, with sufficient sharp sand to make the whole feel gritty when compressed in the hand. This compost should be used in a tolerably rough state, which will prevent its settling down into a hard mass. The drainage must be efficient, and then a bountiful supply of water may be given, which will benefit the plants while growing. After flowering they should be removed to a cool house, and be kept as dry as possible without allowing them to suffer from drought, and they should remain dormant until the time arrives for cutting back and starting the plants into growth. The time for doing this will depend upon that at which their flowers are required, bearing in mind that they are produced very quickly if properly encouraged. G.

[The specimen from which our figure was prepared was supplied from Messrs. Rollisson's nursery at Tooting.]

PROPAGATING.

Show and Fancy Pelargoniums.—These may be increased nearly all the year round. Cuttings made of young and tender wood strike root freely and quickly if prepared as shown in fig. 1, and inserted in well-drained cutting pots. The compost should be loam, leaf-soil, and sand in equal parts. Plunge the pots half way up in a brisk bottom-heat, and occasionally sprinkle the cuttings overhead, and shade them from hot sunshine. If the propagating house be a very close one, they will require little or no covering, but they must not be allowed to get so dry as to flag. If an extra stock be required of any sort, it can be obtained by means of pieces of root cut and put in upright, as shown in fig. 2. Pieces 1½ in. long are best; they should just be left peeping out at the surface; then place the pots or pans on a shelf in the propagating house near the light to induce growth, which will commence in about three weeks. When they have made four or five little leaves they may be potted off into single pots. Plants from roots grow very rapidly and strongly. H. H.

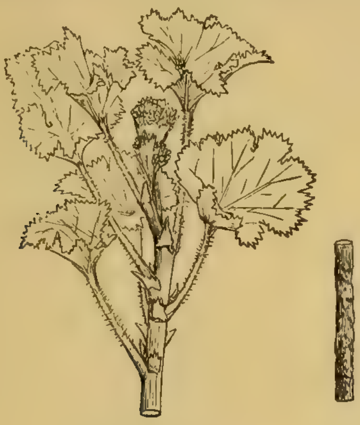


Fig. 1. Fig. 2.

Cuttings of Pelargoniums.

M. WEBER'S MODIFICATION OF THE OSSENKOP METHOD OF STRIKING CUTTINGS.

In a recent number of the "Revue Horticole," M. J. B. Weber, the head gardener to the city of Dijon, gives an interesting account of his modification of a new method of striking cuttings invented by M. Ossenkop, an Austrian horticulturist. The truth of the principle upon which M. Ossenkop's mode of working is founded has, according to M. Weber, been thoroughly recognised by all of our most eminent horticulturists for many years past. The leading idea of M. Ossenkop's system is, that the cuttings should be so planted that the lower portion should be in a hotter medium than the upper, so as to hasten the development of the rootlets before the buds begin to make their appearance; for when the contrary takes place they do not strike properly, at least in the majority of cases. This doubtless arises from the buds sucking up the whole of the nutritive substances contained in the cutting before the new roots have had time to form. M. Ossenkop's system can only be applied to woody cuttings which have been purposely deprived of their leaves, for it would require a too troublesome and complicated series of appliances in the case of cuttings upon which several of the leaves had been allowed to remain. This method, it must be borne in mind, is not new; for M. Weber has practised it for many years with Vine cuttings, and has succeeded so well with it that he has recommended its adoption in his lectures. As soon as the subjects begin to shed their leaves he cuts the necessary number of slips, and prepares them for striking by inserting them in the ground in a well-sheltered position, in a soil that is light rather than compact, the lower end of the cutting being upwards and slightly inclined, the whole being covered over with a layer of soil to a depth of from 4 in. to 6 in. When the cold weather approaches the layer of soil is doubled, or even trebled, and covered over with stable litter to prevent the frost from reaching the cuttings. When the spring begins to set in, the litter is removed and the layer of soil is reduced to its former thickness—*i.e.*, from 4 in. to 6 in.—for it is essential that the heat of the sun's rays should penetrate the soil and reach the upper ends of the cuttings, so as to set the sap in motion in those parts of the slip which are to emit rootlets, while the part turned downwards, which is to produce buds, remains in an almost complete state of rest until the arrival of the period for planting. The most suitable time for this operation may be easily known by the swelling of the heel of the cutting, and the appearance of a number of fine rootlets. M. Weber generally plants his Vine cuttings about the end of the third week in May. This year, however, they were planted five days later. When he wrote, on June 20, many of the rootlets were nearly ½ in. in length, and out of 3000 cuttings of nearly 1000 varieties of Vine the whole had thrown out shoots 3 in. or 4 in. in length. As for the many fanciful applications of the principle proposed by M. Ossenkop, they are too difficult of application, and necessitate too great an expenditure of time, in striking cuttings of plants that can be more readily multiplied by much more simple means. For instance, the use of a kind of box with a double bottom, the lower part of which is intended to receive the shoots, or even the buds in a reversed position, and consequently the herbaceous portions which are provided with leaves; while the upper part, which is much shallower, is to receive the soil which is to cover the lower part of the cutting, and in some cases to act as a support for glazed lights, which are intended still more to concentrate the heat of the sun on the layers of soil covering the root end of the slip. The same may be said of the means which M. Ossenkop uses to favour the development of roots in plants which are to be repotted or transplanted. Instead of having to construct enormous wooden frames provided with false bottoms pierced with holes to receive the heads of the cuttings, and to support the layer of soil above them, the preparation and application of a simple layer of soil is much easier, much cheaper, and much more likely to be successful. M. Ossenkop's descriptions, be it said, are often confusing, and not of a nature to insure the proper comprehension of his mode of working, which at one time made such a noise in the horticultural world, but which by this time is almost forgotten, except perhaps by the inventor himself.

C. W. Quin.

Propagating Kniphofias.—Those who possess and wish to increase their stock of these need not fear to behead those of the caulescent section, as I have repeatedly practised that operation with success; in fact, it is the only way I find to propagate K. caulescens, as it so seldom develops offshoots unless so treated, when it will throw up a large number, which, if allowed to remain until a root or two are produced, may be taken off and kept in a close frame for a time and potted in a sandy compost. K. sarmentosa is the easiest to increase, as it throws out underground shoots, which may be taken off at any time. K. Quartiniana develops small shoots at almost right angles with the base of the stem, and I find, if these be taken off and treated as cuttings, they strike freely. The acaulescent group is, of course, best propagated by means of division or seeds.—W.

The California Fan Palm (Pritchardia filifera) is a native of California, and is found along the Colorado River, and in some places in the desert in San Diego county. A plant only three years old, grown by Mr. Rock, the well-known nurseryman of San Jose, the seed of which was sown on the 15th of February, 1876, stands now 4 ft. 6 in. high. The objection to Palms has always been their slow growth, taking a long time to make a showy plant. About twenty years ago a quantity of seed of this Palm was brought to San Jose, and M. Prevost, the pioneer nurseryman, cultivated them and raised about fifty plants. These were distributed over the State, notably some of them in front of the cottages at Calistoga, most of them having grown into specimens of 20 ft. and 30 ft. in height. M. S. Latham, of this city, bought two in San Jose, which stood, at the time of purchase, about 25 ft. in height, for the handsome sum of 1000 dollars. These he moved to Menlo Park, a distance of 18 miles. Many doubted their ever growing, but they have done well. They stand now nearly 40 ft. in height, and are almost 3 ft. in diameter, crowded with a beautiful head of fan leaves. They stand in front of a magnificent residence on an open lawn, and present a most attractive aspect. Mr. Grant I. Taggart, of Oakland, informs us that two of these Palms are growing at Shasta on the premises of Mr. Hopping, county judge of Shasta county. They were planted some twenty years ago, and have immense trunks. This must be about as far north as Palms were ever cultivated in the open air. At Shasta the ground is often covered with 2 ft. of snow. The California Fan Palm is the most distinct of the Palms, having an abundance of fine threads hanging down from the leaves. It will be very valuable as an ornamental plant in all sub-tropical climates, being the fastest grower and hardiest of all Palms. Not until the last four years has its native place been known, but upon the completion of the Southern Pacific Railroad they were found along its line, and whole carloads of large plants have been brought to San Francisco and sold. Several large specimens of these graceful Palms are now adorning the residences and lots of our railway magnates on Nob Hill. They may be now had almost at any nursery at a reasonable figure.—"California Horticulturist."

GARDENING FOR THE WEEK.

Flower Garden.

Roses in Unsuitable Soils.—Roses, more than most deciduous plants, are affected by the nature of the soil in which they grow, and to those—and there are many who think more of Roses than all other flowers put together—it is a matter of extreme disappointment, after having procured a collection, to find that they gradually dwindle away. Light, sandy soils do not grow Roses, especially when grafted or budded on the Brier, in anything like the way in which they grow in strong, heavy loam, and on such it is simply a waste of time and expense to attempt their cultivation on the Brier unless means be taken to add to the natural soil in sufficient quantities that in which it is deficient. As the best time for planting Roses—that is, as early in the autumn as the fall of their leaves will permit—is coming on, a few words upon what may be done to render such soils as I have mentioned suitable for them may not be out of place. First, I may observe, that in this, as in other gardening operations, it is much better to do all that is attempted thoroughly than to hazard the result by half measures; consequently, it will in all cases be better to limit the extent of ground that is to be prepared than to extend the space further than the available material will render suitable. Where good heavy loam, almost approaching a clayey nature, that is, containing little or no sand, can be had in quantities so as to lay it on the light soil to the extent of 1 ft. in thickness, this will be the best addition, digging it in with about an equal depth of the land to which it is being added; it may then be left to lay for about a couple of months, say to the end of October, when put on 6 in. of good rotten manure, digging the whole over again so as not only to incorporate the manure with the soil, but, so far as possible, to mix the heavy soil with the light.

Marl or Clay for Roses in Light Soil.—Where good strong loam is not available to use in the way described, marl—if it can be had, and, in the event of this failing, clay—will answer, but it will not do to incorporate marl, much less clay, in a crude state, that is, when fresh dug, with even the lightest natural soil, as it would lay much in the same state in which it was thus dug, and so quite unfit for the roots of the Roses to enter. To avoid this it must be laid on the surface, evenly spread out—say 9 in. or 10 in. in thickness—exposed to the sun and drying winds for a few weeks, turning it over once or twice, so as to get it dry through, after which, as soon as moistened by the rain, it will fall to pieces almost like slaked lime, when it must be forked in to a similar depth advised for the loam; and, as in the case of the latter, it will be well to again fork the whole over, putting in at the time a full dressing of manure. In light peaty soils the same additions as above advised will be found equally beneficial in their effects.

The Most Suitable Time for the Above Operations.—Where ground has to be prepared in the way here described, there is no season in the year equal to the present, for the obvious reason that the weather we may expect for some weeks yet will be of a character calculated to effect the necessary drying of the marl or clay, which, in itself, is easier procured than later on, and is in a much drier state, consequently better calculated to effect the desired object. Where the natural soil, even if it is of a nature suited to Roses, is too thin, or resting upon a rocky or gravelly formation, an addition, such as the above, will be found the best means of proceeding to grow Roses satisfactorily; likewise where the land has got exhausted through long being under a crop of some sort, for it must be borne in mind that the soil, even for Roses, unless where of the most suitable description, in time gets tired of manure alone. I have said nothing about drainage, for, in such places as indicated, it will be found that the natural soil is already too dry, except where peat is the staple element, when it often happens that there is, especially during the winter, too much water in it. Where this exists drains in sufficient number must be put in before preparing the ground.

Roses for such Soils.—The further the soil is from being adapted to the exact requirements of Roses, the more necessary I have found it to grow them on their own roots, and to confine the varieties to those that are vigorous growers. Weak-constitutioned sorts are useless for these places; however fine the individual flowers they produce may be, they will be no compensation for a weak habit. Where not to be grown on their own roots, the Manetti stock will be more suitable generally for over-light soil than the Brier, which, although delighting in a naturally dry situation, as note its preference for a dry hedge back, where no stagnant moisture can lodge, yet the Brier, to grow Roses well, should have a naturally heavy loam.—T. Baines.

Flower Beds and Borders.—Attend to mowing, sweeping, and removing dead flowers and leaves from beds and borders; by this means they will be rendered attractive and enjoyable for at least a month or more to come. The mixed or herbaceous border should now have careful attention, as Phloxes, Pentstemons, and many other late autumnal flowers will now be in full beauty, and should not be in any degree marred or disfigured by being associated with the decaying flowers and foliage of other occupants of the border, nor should such plants be by any means cut down prematurely, or in an unripened condition; but, at the same time, all dead and decaying matter may be removed with advantage to them as well as to the general appearance of the garden. As regards annual plants, they should be at once removed as soon as their beauty is over, unless in cases where seed may be required, and this should be carefully picked as it becomes ripe. A border of herbaceous and Alpine plants and bulbs, whether situated upon the margins or belts of flowering and evergreen shrubs or otherwise, should be so arranged as to have the flowers peculiar to the different seasons so distributed throughout the entire length and breadth of the border that no portion of it will, at any season of the year, be entirely destitute of flowering plants; and care should also be taken to properly graduate the various species as regards their height, so that dwarf-growing plants may not find themselves partially hid or overshadowed by taller growing sorts. Beds or clumps of double-flowered Zinnias are now in fine condition and are most valuable as autumnal-flowering plants, and possess the power of resisting drought to a very considerable extent, especially if a deep, rich, and well-manured soil has been selected for them, and such encouragment they well deserve. They should be sown under glass, about the end of March or early in April, and should be planted out about the end of May. They may be planted tolerably close together, say about 6 in. or 8 in. apart, and all inferior sorts should be extracted from the bed or clump as soon as they show flower; the space they occupied will soon be taken possession of by the remaining plants. Go carefully over the beds now and select a few of the very finest and most distinct blooms as seed-bearers, and mark them by securing to them pieces of coloured worsted or other material, and pick them as soon as they are ripe. By this means, the strain will be continually improved, while the reverse will be the case if the seeds are gathered indiscriminately. Let Chrysanthemums, German and other Asters, as well as all other late-flowering plants, be carefully staked to prevent them being blown down or injured by high winds. Order, or get in readiness, the various bulbs which will soon be required for furnishing the flower beds for spring. The cuttings of such plants as the Verbena, Petunia, Coleus, and Alternanthera, which may have been struck in close frames or pits, now will, in most instances, be well rooted, and the store pots or pans containing them should be placed on cinder ashes in the open air, fully exposed to the sun for some time, or as long as it can be done with safety; this will have the effect of rendering them robust and hardy, and it is of the greatest importance to have them in this condition before the approach of winter. Care must be taken not to expose them too long.

Indoor Plant Department.

Late-sown Primulas intended for flowering in spring should now be shifted into their blooming pots, which should be 6-in. ones; pots of this size, with the aid of manure water, will be found large enough for fast-growing, soft-wooded plants. Primulas like a compost consisting of good fresh loam with one-sixth leaf-mould and a little sand. An idea is prevalent that they are liable to damp off if the collar of the plant in potting be not kept well up above the soil. Why such an impression should exist it is difficult to surmise, unless it arises from the fact that Primulas are, more than most plants, subject to damp off at the stem, especially during winter, if kept in too low a temperature with correspondingly too much water; I say correspondingly, for if Primulas be grown through the winter in a night temperature of 50° or 55°, they will bear almost as much water as Cinerarias, without suffering in the least from damp, showing clearly that it is the low temperature which they dislike; but when kept warm in this way they must be close to the light, or the growth will be drawn up weakly. Press the soil firmly in the pots, letting it come well up to the base of the under leaves, so as to keep the plants secure in their places without rocking about, as they do when not potted low enough. Let both these and the earlier-sown plants intended to flower through the last months of the year and early portion of the next be for some weeks yet in cold frames exposed to plenty of air, elevated close up to the glass, with the lights off in fine weather, particularly at night, as exposure to the dew is of considerable service to them. A piece of very thin, open netting stretched over the frames during the daytime, when the sun is on them, will be much better than exposing them to its full influence.

Cinerarias.—Attend well to those that were sown earliest, as their pots will now be getting filled with roots, in which case any deficiency in the way of water will so far injure them as to cause the loss of their lower leaves, and when that happens, however well flowered they may be, they lose half their beauty. Let the plants be looked over every ten days in order to see that aphides do not get a lodgment on them, or a like loss of leaf will be the result. If the plants be fumigated to destroy aphides it should be done lightly, or the foliage will be liable to get injured. The safest course is to watch closely, and immediately a plant is affected with either aphides or thrips to dip it in Tobacco water, a supply of which ready for use should always be at hand in every garden, large or small, especially during spring and summer, when these insects come to life so quickly.

Late-struck Double Petunias will, if they have been well attended to, have been found very useful for either greenhouse or room decoration. Cuttings of these should now be put in for flowering next spring and summer, after which the old plants, when done blooming, may be thrown away, as young ones are in all respects better, and occupy less room.

Nierembergias are now much neglected. Although small-growing, free-flowering subjects, they are well worth cultivation. They are very suitable to edge vases for summer decoration, where their drooping habit and profusion of flowers are seen to advantage. They are particularly adapted for use in window boxes or for room plants. Cuttings should at once be got in, selecting the softest shoots that have not a disposition to bloom. Put in the points of these 1 in. apart in 5-in. pots in sandy peat surfaced with ½ in. of sand; water them immediately and cover with a bell-glass, putting them in a little warmth. When they are struck they should be placed singly in small pots for the winter and kept near the glass. If they can be accommodated with a temperature of 45° in the night it will keep them growing.

Ferns.—Reduce the atmospheric moisture of the Fern house, and also the roof-shading, but this only in a comparative degree; Ferns having no wood to mature and solidify like flowering plants, neither require, nor will they bear this additional sunlight, and drier root treatment being carried so far as in the case of flowering plants, without suffering seriously. What they do require at this season is simply to carry this treatment so far as to check the disposition to make growth and rest the plants, so as to get them in that condition that they will move with vigour when the season of active growth comes round. In places where Ferns are grown, if the plants stand on any loose material that will hold moisture, such as ashes or sand and fine gravel mixed, kinds like Pteris serrulata, and the varieties of Adiantum, such as A. cuneatum, formosum, and pubescens, will drop their spores and vegetate in quantity without the trouble of a special preparation in sowing them. The young plants that thus come up in spring will now be large enough for putting singly in small pots; for these do not use them too large, but in all cases let them be proportionate in size to the plants. Peat is the most suitable soil in which to grow them when it can be had good, but, where not easily procurable, these and other Ferns will grow in ordinary loam, always taking the precaution of keeping it porous by a liberal admixture of crocks broken to the size of Horse Beans; or coal cinders will do equally well broken small, to which some sand has been added; the proportion of this latter, for these, as for all other plants, cannot be exactly determined, being dependent upon the quantity of sand the soil naturally contains. I am led to make these remarks by so often seeing cultivators fall into the opposite extremes of mixing too little or too much sand with their potting material, the result of which is either the whole mass in the pots gets sour and unsuitable for healthy development of the roots in the former case, or not affording sufficient sustenance through being too open and poor. Ferns, unlike many plants, should, as soon as potted, be immediately watered, for, if ever the soil be allowed to get so dry after potting, as is needful for subjects that do not require so much water, they will flag, and whenever this occurs to a Fern, especially when its roots have been disturbed, as in the case of potting, it receives serious injury, and generally loses many of the fronds. The cultivation of Ferns is often associated with the idea of a dark, heavily-shaded situation. This produces a disposition of the fronds to damp off in the winter, especially if the growth has been made in too close and warm an atmosphere. Ferns so treated generally make very large, deep green fronds, but not enduring; the varieties above named, which are so useful for general purposes, can scarcely be grown with too much light, provided they are shaded slightly from the direct rays of the sun when it is powerful. Older plants of Ferns, such as the above, grown for cutting, should be kept in comparatively small pots; by this means any disposition to luxuriant growth is checked, and they will stand in water for several days.

Window Plants.—Remove plants that have done blooming, and always endeavour to have good healthy foliage if flowers are scarce. The Ivy-leaved Pelargoniums are the best of all window plants; display them to advantage, and pick off seeds and decaying leaves from Tropæolums. Balsams and Asters are now very pretty in windows, as are also some plants of Tagetes and African Marigolds. Give plenty of water to plants of Creeping Jenny, and permit the shoots of the Virginian Creeper to droop in graceful festoons. Introduce a few Cockscombs, yellow Calceolarias, Grasses, and any other miscellaneous plants obtainable. Indeed, a very pretty ornamentation in the window is the Japanese Maize grown in pots. Mesembryanthemums, too, are very useful for a dry position, and Gazania splendens for a sunny one. The various small-leaved Ivies, too, should not be forgotten; they are useful for suspended baskets, screens, or for spreading over balconies, and they grow and thrive under even adverse circumstances. Ferns and Selaginellas are also, as everybody knows, excellent for windows, especially those facing the north or east; and for windows facing the brightest sunshine, Acacia lophantha and other kinds of Acacia, some sorts of Asparagus, Convolvulus mauritanicus, Grasses, and other plants of that sort are suitable.

Indoor Fruit Department.

Vines.—Examine the inside borders of late Vineries, and see that the soil is not too dry before the Grapes become nearly ripe. Where such is the case, lose no time in giving sufficient water to mature the crop, and also to keep the soil moist enough to prevent the fruit from shrivelling during winter. Every favourable opportunity must be taken advantage of to push on very late Grapes this month, for the decrease in the amount of sun-heat, which will be felt in subsequent ones, will be unfavourable to their development. Late Grapes are better flavoured when thoroughly ripe by the end of September than later, and they are not so liable to damp throughout the winter when in this state as when only partially ripe. Gros Colman is, in many instances, a bad kind to colour; but it often keeps well, and is quite eatable when tinted with green. No anxiety need be felt about the colouring of the Black Alicante; it will do so under all circumstances. The surface of the border under Grapes ripe for autumn use should now be kept very dry, to prevent damping amongst the fruit; and do not rake or stir the loose surface soil, or a great deal of dust will rise to rest on and disfigure the berries. Keep the ventilators of all Vineries in which the fruit is all cut wide open night and day, so that the wood may become ripe as soon as possible. Do not give young Vines planted this season so much water as they required in the earlier stages of their growth.

Pines.—Plants of all kinds, excepting early Queens, now require more fire-heat than they have had for some months, especially at night. On dull days the fire should be kept going quietly throughout, and water must be given in moderation after this period. Newly-rooted suckers do not generally require much water until spring, and they are more likely to become unhealthy when kept very moist than when they are somewhat dry. Discontinue all syringing overhead, excepting after an exceedingly bright day.

Kitchen Garden.

Late Crops.—Unless where a deficiency of winter vegetables has been put in, and there are good strong plants at hand of Kale or Coleworts, it is not advisable to plant more of the ground that becomes vacant after this, as the time intervening before the growing season is over is not sufficient to admit of these late-planted crops attaining a useful size, and they seriously interfere with the preparation of the ground for another year without making any adequate return. Let all haulm of Peas, French and Broad Beans, or Lettuces that have run to seed, or anything of a similar description, as soon as they have ceased to bear or to be of further use on the ground, be at once removed. It is a mistake to allow anything of this kind to remain; for, so long as any growth continues, it is so much extracted from the soil to no purpose. They should, therefore, be conveyed to the refuse heap as soon as possible. Let all ground be well hoed as often as weeds make their appearance. These will not cease to spring for some time yet, growing, as they do, with a lower temperature than most cultivated crops. Where salads are in constant demand, especially in the spring, it is well now to sow a little Corn Salad and American Cress. These hardy plants will stand any amount of frost and prove useful in the spring. Sow the seeds in rows 1 ft. apart; this will give room to use the hoe in keeping the ground clean. Thin Turnips as they get large enough; if allowed to remain too long they become drawn, which much interferes with their after growth.

Mushrooms.—Those who have not a regular house for Mushrooms are frequently deterred from attempting their cultivation. In the successful growing of these vegetables much depends upon the atmosphere that surrounds the beds, and it often happens that the most highly-finished Mushroom houses are anything but the best to grow them in. For market purposes, all through the autumn, very large quantities are grown on ridges in the open air, covered with litter in some cases, aided by wooden shutters; but this method requires a good deal of attention and some experience. A few words respecting the conditions essential to the growth of Mushrooms may not be out of place for those who have not had much practice with them. They require a moist, genial atmosphere to grow in; in other words, the air immediately enveloping the beds must be soft and sufficiently warm, subject to no cold draughts or considerable fluctuations in temperature, such as the external air is liable to. From this it will be seen that, to give a reasonable chance of success, a place must be at hand where these conditions, if not existing, can be provided. A close shed—if somewhat low all the better—or any building not too large, that can be spared for the purpose, may be used. Beds of very small superficial area are not likely to bear so well as those that are larger, for the reason that the body of manure in the place is not sufficient to produce the requisite state of the atmosphere. The manure should be procured from stables where the horses are well fed with plenty of corn, and where there is no deodorising chemical powder or liquid used, as these are fatal to the Mushrooms. Let the manure be fresh, not such as has been wet and fermented, and do not use the long littery portion. At the same time, it is not necessary to be particular in having nothing but the manure, as is frequently urged, for a little short straw amongst it will do no harm. As soon as procured, it should either be placed in a covered shed where it will not get wet, or at once put where it is to be made use of. In either case, let it be in a moderate-sized heap, and turn it over several times to prevent its getting too hot; this will work off any superabundant moisture, to assist which it should have plenty of air. In the course of a fortnight or so it will be in a condition for making up into a bed. This should be about 18 in. in thickness, the area of which will be regulated by the size of the building or the quantity of the manure used. As the work proceeds beat it quite solid with the fork and finish off by making the surface hard and smooth with the back of the spade. In a week's time ascertain the heat of the bed by plunging a thermometer in it, and, as soon as it denotes a little under 80° in temperature, put in the spawn. This should be broken into pieces about the size of pigeons' eggs, and should be thrust just below the surface at intervals of 8 in. or 10 in. Try the heat of the bed again in a few days, and, if the warmth is decreasing, put on the soil. Any ordinary loam will do; this must have been turned over several times to get it to the requisite condition. It should not be so wet as to adhere too closely together when pressed by the hand; put it on about 6 in. in thickness, breaking it moderately fine previously, and beating it down with the back of the spade so as to make it smooth. A couple of inches of loose hay should be spread over the surface; in some Mushroom houses it is an assistance, in others it is not needed; but when the houses are small, and there is no fire-heat used, it is generally required. If all goes well, in a few weeks the spawn will begin to run, which will be seen in the shape of white mould on the surface; after this the buttons will soon commence to make their appearance. There is no precise time that can be stated for a Mushroom bed coming into bearing after it is spawned; those that are the longest before they begin to yield are often the most fruitful after they have commenced. As the weather becomes cooler it will be a material assistance to get in a body of new manure, which can be laid 18 in. or so in depth on the path and occasionally turned over; this will raise the temperature of the place and produce an atmosphere conducive to the growth of Mushrooms. The manure, when fit, can then be made up into another bed to come into bearing after the first is prepared and treated similarly. In growing Mushrooms it is necessary to take the precaution to always have on hand, where it will not get too wet, enough loam for soiling the beds. When the manure is good in quality, many successful growers mix fully a third of loam with it in the beds. Sometimes a bed will get too dry before it has finished bearing, or even before it begins to bear; the latter not so often. In applying water to these, as in its use with many plants, it is a difficult matter to convey in writing a positive knowledge of when it is required. In the cultivation of Mushrooms, if too much be used it will destroy the spawn; if too little, it will not grow. Much may be learnt that will assist in the culture of Mushrooms by observing the combination of conditions that exist in the ground and in the atmosphere in seasons when they are the most plentiful out-of-doors. The most experienced grower will sometimes fail with them. I have known the first attempt to be most successful; where the reverse is experienced, I would say try again. It is only the loss of a little labour, for the manure so prepared is none the worse for ordinary purposes afterwards. In the growth of this esteemed vegetable it is of great importance to be able to command an equable temperature, and a genial condition of the atmosphere in the place in which they are grown. The best house I have ever seen for producing unfailing crops was nothing more than a long, straw-thatched, span-roof, resting on the ground with no side walls but brick gables, with a door at one end, and a flow and return hot-water pipe covered with grating running under the path which was down the centre. The beds, about 6 ft. wide each, were on either side. Mushrooms can be grown in a place of this description when the weather is too warm for them to do well in the houses generally met with.

Extracts from my Diary.

September 9.—Sowing Red and White Turnip Radishes. Shifting a few Cinerarias and Primulas into pots for blooming early. Putting in cuttings of double Petunias, Lobelias, and Nierembergias. Cutting and bottling a few bunches of Black Hamburgh Grapes left from the second early house, and removing the lights off the same in order to get the wood well ripened. Cutting off all heads of Globe Artichokes that are overgrown. Removing all young shoots from Tomatoes in order to expose the unripened fruit to the sun and gathering those that are ripe; also removing laterals from Vines and cutting out bad berries from the bunches. Making new gravel walks.

Sept. 10.—Potting Pelargoniums which have been struck in the open ground. Clearing off Strawberry runners from permanent plants, applying a good coating of rotten manure between the rows and forking it in. Dutch hoeing amongst Broccoli and all other growing crops to kill weeds before wet weather sets in. Planting all spare ground with Cabbage plants to come into use in winter. Gathering Louise Bonne of Jersey, Jersey Gratioli, and a few Marie Louise Pears for dessert.

Sept. 11.—Potting a collection of Campanulas. Covering up dwarf Beans with spare lights to protect them from early frosts and heavy rains. Roughly digging and heavily manuring a piece of ground lately cleared of Peas for next year's Onions. Earthing up Celery and Cardoons. Pruning and painting the early Black Hamburgh Vines and washing the woodwork and glass. Emptying old Mushroom bed and turning manure for another one. Pinching off all runners from Strawberries in pots. Weeding and hoeing amongst Asparagus beds.

Sept. 12.—Pricking out Black-seeded Brown Cos and Stanstead Park Lettuces. Thinning out Spinach and afterwards hoeing between the rows. Cutting Grass edgings and turning gravel walks to give them a fresh appearance for the winter. Cutting off Strawberry runners and weeding and hoeing between the plants. Earthing up Celery whilst the soil is dry and friable. Spawning and soiling Mushroom bed. Watering Pines all through; also Lettuce and Cauliflower plants.

Sept. 13.—Potting off cuttings of Coleus and Alternantheras. Putting in cuttings of Heliotropes and Pelargoniums. Digging ground for August-sown Cabbages. Clearing off Peas and cleaning the ground for other crops. Thinning Turnips. Cleaning, weeding, and rolling gravel walks. Stopping all laterals on Vines. Placing stakes to Pines which are in fruit. Tying out Chrysanthemums. Gathering Yellow Ingestre, Cox's Orange Pippin, and Emperor Alexander Apples; also a few more Marie Louise Pears and Tomatoes. Watering indoor Peach borders.

Sept. 14.—Sowing Chervil. Thinning out Mignonette in pots; also Lettuce and Endive in seed beds. Dutch hoeing between all Cauliflowers, Cabbages, and newly-planted Lettuce and Endive. Looking over all Cucumbers and Melons and stopping their shoots where required. Renovating manure linings round frames. Filling up Grape bottles and cutting out all bad berries from the bunches. Fruit in use for dessert: Pines, Grapes, Melons, Peaches, Figs, Nectarines, Pears, Apples, and Plums.—W. G. P., *Dorset.*

Hyde Park.—The gentleman who wrote so enthusiastically a few days ago in praise of the "carpet gardening" in Hyde Park, and its "marvellous regularity," no doubt represents the taste of some portion of the public; but there are certainly others who, like myself, look upon these marvellously regular beds as anything but the perfection of horticultural art, and would rather see part, at least, of the great pains and cost which they absorb given to the trees and greensward, which have for a long time been so grossly neglected.—William Allingham. [The above is in the "Times" in reply to an amusing note that appeared therein signed "Edward Sullivan."]

GARDEN BOTANY.

(Continued from p. 207.)

Pistils with an Inferior Ovary.—Inferior ovaries usually contain several or many ovules whether one-celled or more than one-celled. The large Natural Order of Compositæ is an exception, the ovary being always inferior and uniovulate. As already explained, the ovary becomes inferior in consequence either of the calyx tube adhering to it, or the floral axis itself growing up around and to it. Sometimes it is difficult to determine which is the case in a fully developed flower; but this is of little practical importance, because in descriptive botany the distinction is not made. Figs. 528 to 534 illustrate this group. In fig. 530 (Samolus Valerandi) the ovary is one-celled, with free central placenta; in fig. 534 (Chrysosplenium) it is also one-celled, but the ovules are affixed to two parietal placentas; whilst in the four-celled ovary of Mesembryanthemum (fig. 532) the ovules have an axile placentation.

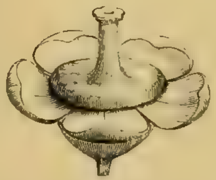


Fig. 528.—Pistil of Samolus Valerandi, having an inferior ovary.

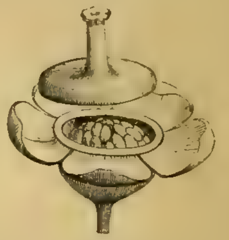


Fig. 529.—Pistil of Samolus, with the top part removed, showing the single cell of the ovary.

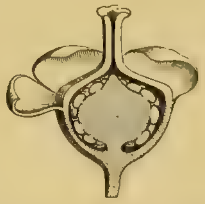


Fig. 530. — Longitudinal section of the pistil of Samolus, showing the free central placenta studded with ovules.

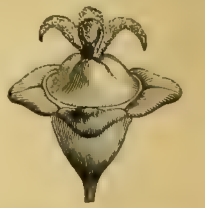


Fig. 531.—Pistil of Mesembryanthemum cordifolium, with an inferior four-celled ovary.

The Ovule.

Having already pretty fully described the principal modifications of the seed, it is unnecessary to enter so much into detail here as would otherwise have been the case. Nevertheless, as the development and structure of the ovule cannot be seen and followed without the aid of a microscope, it is all the more desirable to describe and illustrate the leading types of the ovule. At the outset the learner should be careful not to confound embryo with ovule.

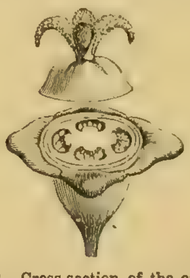


Fig. 532.—Cross section of the ovary of Mesembryanthemum, showing the four cells and numerous ovules.

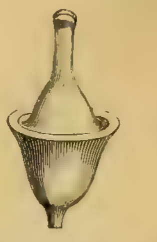


Fig. 533.—Pistil of Chrysosplenium with a half-inferior ovary.

Origin of Ovules.—Ovules appear on the placenta as minute nipple-like projections of homogeneous cellular tissue, which in course of development differentiates into what is termed a nucleus and integuments, or coats, and a stalk. The nucleus develops as a cellular body in which a relatively large cell is formed; this is the embryo sac. Usually two coats of tissue grow around the nucleus from the base upwards, finally entirely enclosing it, with the exception of a narrow aperture. The inner integument or coat is completed first, though named the secundine, from its position in the perfect ovule, the outer being called the primine. Fig. 535 represents a perfect ovule, very much enlarged and torn, open to show the coats and nucleus. That point of the ovule where an organic connection exists between the nucleus and its coat or coats is the chalaza, in the axis or centre of which is a cord of a different kind of tissue—a vascular bundle, which runs through the stalk of the ovule into the placenta. The stalk receives the distinctive name of funicle, and the orifice leading through the coats to the nucleus is the micropyle or foramen. In consequence of differences in growth, the relative positions of funicle and micropyle vary very much, and ovules are divided into three classes according to their shape, viz., orthotropous, anatropous, and campylotropous.

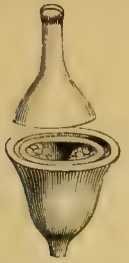


Fig. 534.—Cross section of the one-celled ovary of Chrysosplenium, showing the two parietal placentas.

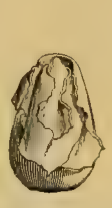
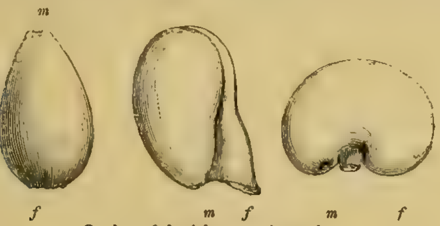


Fig. 535.—Ovule of Rhubarb, torn open to show the two coats or integuments and the nucleus. Enlarged.



Ovules—*f*, funicle; *m*, micropyle.

Fig. 536.—Orthotropous ovule of Rhubarb.

Fig. 537.—Anatropous ovule of Helleborus fœtidus.

Fig. 538.—Campylotropous ovule of Phaseolus vulgaris.

ORTHOTROPOUS OVULES.—In this the growth of the nucleus is quite straight, so that the micropyle is at the end of the ovule, opposite to the funicle (see figs. 536 and 539). This kind of ovule is characteristic of the Rhubarb, Dock, Knotweed, Stinging Nettle, many Conifers, &c.

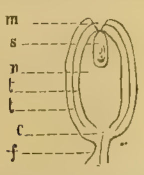


Fig. 539.—Longitudinal section of an orthotropous ovule (represented diagrammatically); *t*, inner integument (secundine); *t*, outer integument (primine); *n*, nucleus; *m*, micropyle; *c*, chalaza; *f*, funicle; *s*, embryo sac.

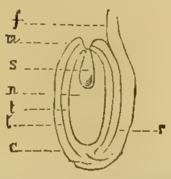


Fig. 540.—Longitudinal section of an anatropous ovule (represented diagrammatically); *f*, funicle; *r*, raphe; *t*, inner integument; *t*, outer integument; *n*, nucleus; *m*, micropyle; *c*, chalaza; *s*, embryo sac.

ANATROPOUS OVULES.—When the organic base (chalaza) is at the end of the ovule opposite to that from which the funicle is given off and the micropyle is near the funicle, the ovule is anatropous (fig. 537). That part of the funicle which adheres to the ovule, running from the chalaza down one side, is termed the raphe (figs. 540 *r* and 546 *r*). Fig. 540 is placed with its organic base downwards; figs. 541 to 544 show different stages in the development of an anatropous ovule. In fig. 541 we have a naked nucleus in an erect position, and in tracing its development onwards to fig. 544 we see that it becomes inverted by the growth of a raphe, or adherent portion of the funicle. This kind of ovule is common to a very large proportion of plants.

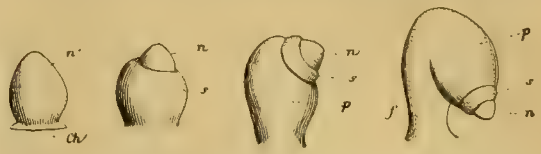


Fig. 541. Fig. 542. Fig. 543. Fig. 544.

Anatropous ovule of Celandine (Chelidonium majus), in different stages of development—*n*, nucleus; *ch*, chalaza; *s*, secundine; *p*, primine; *r*, raphe; *f*, funicle.

CAMPYLOTROPOUS OVULES.—In this modification of the ovule the nucleus and its coats are curved in growth, so as to bring the chalaza and micropyle near together (figs. 538 and 546); see also the various stages of development (figs. 547 to 550). Campylotropous ovules characterise the Mallow and Pink families. Besides the foregoing principal forms of the ovule, there are all sorts of intermediate ones, some of which have received special names, but they may well be dispensed with.

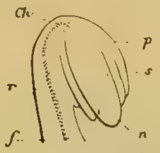


Fig. 545.—Vertical section of fig. 544.

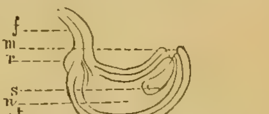


Fig. 546.—Longitudinal section of a campylotropous ovule (represented diagrammatically); the letters have the same significations as in the preceding figures.

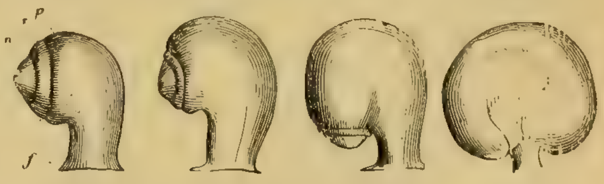


Fig. 547. Fig. 548. Fig. 549. Fig. 550.

Campylotropous ovule of Malva, in different stages of growth—*f*, funicle; *p*, primine; *s*, secundine; *n*, nucleus.

FERTILISATION OF OVULES.—This is one of the most interesting processes in plant life, on account of the varied and beautiful contrivances and provisions for effecting it; but it is only within the last twenty years that much attention has been paid to the subject, and we may add that Mr. Darwin was one of the first and most successful students of this branch of knowledge, besides being instrumental in attracting other persons into the same field of inquiry. Almost every species of plant has its peculiar mode of fertilisation, in so far as the

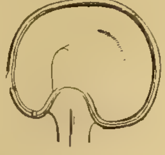


Fig. 551.—Vertical section of fig. 550.

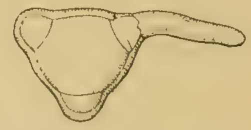


Fig. 552.—Mature pollen grain of Œnothera, emitting a tube. Much enlarged.

conveyance of the pollen from the anther to the stigma is concerned, and whole books have been written on the subject without exhausting it. In this place we can only explain the general plan, and refer the reader to special works for descriptions of the means by which it is accomplished. From preceding paragraphs the reader will have learned that stamens, the organs in which the pollen or male element is generated, are not always borne in the same flower as the pistil, or even on the same plant. Furthermore, when there are stamens in the same flower as the pistil it does not follow that the ovules will be fertilised by pollen from the stamens of the same flower. Indeed, this is rather the exception than the rule, since the pollen is not always mature at the time the ovules are in a state to receive it. When the ovules are ready for impregnation the stigmatic surface of the style becomes more or less viscid, so that the pollen grains coming in contact with it adhere. Sometimes the pollen escapes before the stigma exudes the viscous fluid, when the flower is termed protandrous; sometimes not until after it is dried up, when the flower is protogynous. Insects and wind are the chief agents in conveying pollen to the stigmas, and in many instances flowers are absolutely dependent upon one or the other for pollination; not sometimes upon one, and sometimes upon the other. Plants in which fertilisation is aided by the wind are anemophilous, and entomophilous when insects are the agents. Those of the former category often produce pollen in profusion, like the Pines and Firs, whilst the pollen grains of some of those belonging to the latter cohere in masses, as in Orchids, Stephanotis, Hoyas, &c. In many instances the reason why exotic plants rarely produce seed is, that the particular insect that performs the office for it in its native home does not exist in this country, and the gardener omits to fill its place. The pollen of some flowers is dispersed by a sudden jerking movement of the stamens, as in Kalmias; or the style moves towards the stamens, as in Mimulus. The viscous fluid on the mature stigma not only secures the pollen grains that fall upon it, but it is also conducive to a kind of growth they exhibit. Like seeds, pollen grains, of some plants at least, will retain their vital power, if kept dry, for a considerable period after having attained maturity. Some kinds of pollen, too, are much more easily excited into activity than others, and perform their function more rapidly. What happens when the pollen comes into contact with the stigma is this, each grain puts forth one or more slender tubes (fig. 552), which enter the stigma and penetrate through the conducting tissue of the style into the ovary (fig. 553). Here they quickly find the orifice in the ovules, and a single tube entering at length reaches the large cell (embryo sac). Within the embryo sac two, or occasionally more, vesicles (embryonic vesicles) are formed, and these become impregnated on contact with the pollen-tube. As soon as this act is consummated, one, or rarely more, of the embryonic vesicles rapidly develops into an embryo by becoming clothed with a wall of cellulose (the basis of the vegetable fabric) and internal growth by cell division. Fig. 554 illustrates this. In the course of its development the embryo, as more fully explained in a previous paragraph, either fills the whole cavity, or it is embedded in more or less albumen, and the coats of the ovule form the testa of the seed.

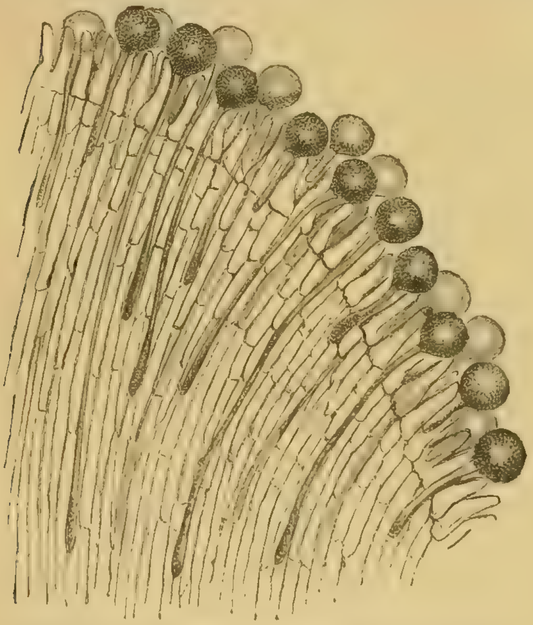


Fig. 553.—Portion of a stigma penetrated by tubes from the pollen-grains. Very much enlarged.

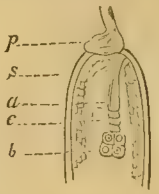


Fig. 554.—Fertilised embryonic vesicle of an Arabis—*p*, extremity of pollen tube; *s*, wall of the embryo sac, inside of which are formed the cellular layers of the endosperm or albumen, *e*; *a*, embryonic vesicle fertilized and developed into a pro-embryo; *b*, embryo.

Relation of the Direction of the Embryo to the Form of the Ovule.—Since the radicle of the embryo, with very few known exceptions, points in the direction of the micropyle (through which it emerges in germination), it follows that there must be an intimate relation between the position of the radicle and the form of the ovule or seed. This is more easily seen in ripe seeds, especially after they have been soaked for a time. The sections of seeds (figs. 555 to 558) represent some of the variations. In the orthotropus ovule the embryo is always straight, the radicle pointing to the micropyle and the cotyledons to the funicle.

Naked Ovules.—From all that has preceded, it would seem that ovules are invariably formed within a closed ovary, but it is not so. There is one important, though small, class of plants in which the ovules are borne on open scales or carpellary leaves, though the seeds are usually protected by the scales eventually growing into dense cones. Cycads and Conifers constitute this class.

Insertion or Attachment of Ovules.—As may have been suspected from our remarks on the ovary and placenta, the ovules spring from a definite part of the ovary. This character is very constant and particularly useful in classification where there is only one ovule in the ovary or in each cell of the ovary. Thus in all the Compositæ the solitary ovule is erect, whereas in the three or four most closely allied orders it is pendulous. In the genus Heracleum (fig. 559) and all the large order of Umbelliferæ, to which it belongs, there is one pendulous ovule in each of the two cells of the ovary. In the ovary of the Grape Vine (fig. 560) there are two erect ovules in each cell. Ovules are collateral when they are placed side by side, as in the Grape Vine (fig. 561), and superposed when one is seated above the other, as in fig. 562. When one end of an ovule is attached to the side of the ovary and the other end directed upwards it is said to be ascending. Generally

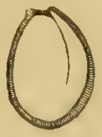


Fig. 555.—Vertical section of a seed of the Wallflower, the embryo filling the whole cavity.

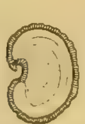


Fig. 556.—Vertical section of a seed of Lychnis, embryo surrounding the albumen.

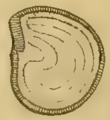


Fig. 557.—Vertical section of a seed of Thorn Apple, the curved embryo embedded in the albumen.

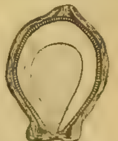


Fig. 558.—Vertical section of a seed of the Marvel of Peru.

the funicle is short, though sometimes very long, as in the common Ash and in many of the Anacardiaceæ.

Number of Ovules in an Ovary.—The ovaries of a very large proportion of plants contain only one ovule, whilst in many instances there are several, or they are numerous. Some few plants produce an exceedingly large number of ovules in each ovary, though it frequently happens that only a small number of them are fertilised and develop into seeds. Perhaps the Opium Poppy is the most prolific of plants in seed bearing. It has been calculated that one capsule contains 32,000 seeds. Another very free-seeding plant is the Foxglove. We have just counted the seeds in one capsule, amounting to upwards of 1200; and the plant from which it was taken bore more than 500 capsules, giving a total of 600,000 seeds—a prodigious number indeed!

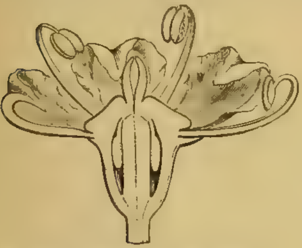


Fig. 559. — Section of an ovary of Heracleum barbatum; ovules pendulous.

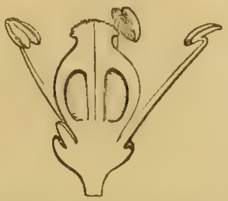


Fig. 560.—Section of an ovary of the Grape Vine; ovules erect.

Singular Mode of Fertilisation of Vallisneria spiralis.—We will conclude this section with a description of the mode of fertilisation of this favourite drawing-room aquatic. On account of the elegance of its Grass-like foliage and its easy management in a small aquarium, this plant is now familiar to most people, though it may be that few have witnessed the processes of fertilisation. It is diœcious—that is, the male and female flowers are produced on different plants, so it is necessary to secure both sexes. In a wild state it grows in marsh ditches (in Central Europe), in water 2 ft. or 3 ft. deep. The male flowers are very small and sessile, on a short spike close to the root of the plant. When they are fully developed, they become detached, and from their buoyancy rise to the surface of the water, where they expand, permitting the pollen to escape. The female flowers are rather large, and borne on very long peduncles, which are, however, coiled up at the bottom of the water until the period for fertilisation arrives, when they uncoil sufficiently for the flowers to rise amongst the floating males on the surface of the water. After fertilisation has taken place the peduncles coil up again, carrying the flowers to the bottom of the water, where the seeds can ripen undisturbed.

W. B. Hemsley.

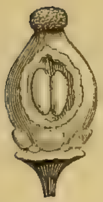


Fig. 561.—A pistil of the Grape Vine, torn at the back of one of the cells of the ovary, showing the collateral ovules.

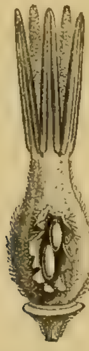


Fig. 562.—Pistil of Chailletia pedunculata, torn at the back of one of the cells of the ovary, revealing the superposed ovules.

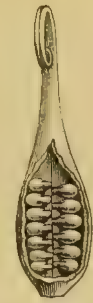


Fig. 563.—A pistil of Helleborus, opened at the back of the ovary to show the attachment of the ovules in two series.

DEPREDATIONS OF WASPS, MICE, &c., AMONGST RIPE FRUIT.

In some situations insects, birds, and small animals do a good deal of mischief amongst ripe fruits. Birds, of course, may be kept off by nets, and a covering of hexagon netting will keep off wasps, but the netting is expensive if a large extent of wall has to be covered. Somehow, too, I always think that fruit covered up during the finishing stage of ripening is not so good in flavour or colour as when fully exposed. Where close netting cannot be had for covering choice wall fruits, such as Peaches and Nectarines, to preserve them from wasps at this season, it is a good plan to hang up bottles half filled with some sweet liquid, such as honey and beer. These should be hung up the moment the first wasp makes its appearance, for, if delayed, the wasps will attack the fruit, and the probabilities are that they will continue to feast upon it, whilst, if the decoy bottles had been at hand, they would have been tempted to enter, and so have found death in the bottle. Where mice are numerous they are often exceedingly troublesome in Vineries in which ripe Grapes are hanging. They run up the Vines and nibble the berries mostly at the top of the bunches, and soon do a large amount of mischief. The remarks just made in reference to wasps are applicable in even a greater degree to mice, for, if they once begin upon the Grapes, traps and poison will have to be baited with something tempting before they will look at them; if, however, a trap or two be kept constantly set about the houses and sheds, when a hungry mouse comes in he enters the trap and is caught before a lodgment of any number can be effected. I have at various times had a good deal of trouble with mice, and I find there is no better plan than keeping two or three traps set in different places about the premises. There is an advantage, too, in having traps of different kinds, for mice have their peculiarities. I have often found, when they have fought shy of the old brick traps, that by substituting Pullenger's patent or one of the ordinary forms of spring wire traps with a change of bait, that they might be captured. As regards the destruction of wasps, if they are at all troublesome the nest should be hunted up and destroyed. The old-fashioned plan—and it is still as good as any—was to mix some common gunpowder with about a fourth of its bulk of sulphur; moisten it with water so as to form a thick, paste-like putty; form it into small rolls or squibs about 3 in. long by ½ in. in diameter. These, when wrapped in paper, ignited at one end, and dropped into the hole leading to the nest, give off such a thick suffocating smother, as to render the wasps insensible, when the nests should be dug up and the whole destroyed. A little practice will enable any one to destroy wasps effectually in this way, and it is just the kind of work in which boys delight, and for which a little extra pay might be given. Another plan that might be tried in some cases is to pour gas tar down the hole. This blocks up the entrance, and the fumes from the tar smothers them. It sometimes, however, fails through the nest being at some distance from the entrance and the wasps opening another outlet.

E. Hobday.

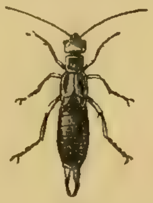
The Thrush a Snail Destroyer.—The thrush is no favourite of cultivators, owing to its being fond of bush fruit. Judging from what I have observed of the doings of this bird, however, I am of opinion that the harm which it inflicts upon us is more than counterbalanced by the amount of snails and slugs which it destroys. I do not believe that there is any wild bird so voracious in this respect as the thrush. This season a family of these birds found their way into a small plantation of Raspberries, and I noticed at times a sharp knocking like that of hitting one stone upon another. This I eventually found to arise from one of the birds making use of a large stone upon which to break the shells, and a hetacomb of these lying around plainly indicated the havoc which had been made amongst them. Previous to this discovery, I had observed an unusual number of empty shells scattered about. The parent birds had, doubtless, fed their young upon their contents. I am convinced that were it possible to tame and keep a pair of thrushes in a garden, we should be but little troubled with snails and slugs. To many who may have been annoyed by the depredations of this bird, it may be some consolation to know that during the greater part of the year it lives mainly upon that which is one of the greatest scourges of both the professional and amateur cultivator.—J. Cornhill.

A Burdock Exterminator.—For years we have been troubled with Burdocks, and, notwithstanding repeated mowing during the summer, they would form seed in the autumn. After many experiments, a certain and speedy remedy for the pests has been discovered in kerosene oil. If a small quantity be poured into the hearts of the plants, directly after cutting, they will disappear entirely, roots and stalks, leaving no trace of their former existence save a small hole in the earth where they stood. This may be styled a crude idea, but refined or crude oil will accomplish the purpose.—"Moore's Rural."

FORFICULA AURICULARIA.

(THE EARWIG.)

This insect belongs to the Natural Order Euplexoptera (from the Greek *euplexo*, to fold well or carefully, and *pteron*, a wing). This Order is so named on account of the beautiful manner in which the wings of its representatives are folded when not in use. The earwig is generally distributed throughout this country, and at times may be found in very great abundance and almost everywhere. It is about ¾ in. long and of a dark brown colour. The head is furnished with a pair of long antennæ, each consisting of fourteen joints; the upper pair of wings is leathery, and serve as wing-cases for the lower pair; they are very short, and only cover about a quarter of the length of the body. The lower wings, when expanded, are very large, and it is astonishing how they can be covered by such small wing-cases; they are, however, folded in a very curious manner. On the front margin of the wing, about one-third of its length from the base, there is a somewhat horny patch, from which radiate a number of veins covered with a very delicate membrane. When the wing is folded these veins close like a fan, and then are folded back on themselves from a point half-way in their length, so that their tips are towards the centre from which they radiate; from this, as a hinge, the wing is again folded back, and by this means all but the extreme tip, where the hardened point is, can be covered by the wing-cases. The insect is obliged to bring its body to its assistance in the somewhat complicated operations of unfolding and folding its wings. The body of the male has nine joints, but that of the female has only seven; in both sexes the last joint is furnished with a formidable-looking pair of pincers; those of the male, however, are toothed and are longer and more curved than those of the female.



The Earwig (Forficula auricularia).

The earwig, as regards its transformations or changes, is very unlike the insects which have formed the subjects of the previous papers, for it never becomes a grub or caterpillar or chrysalis. All true insects undergo the following metamorphoses, and change from the egg to the larva (or grub or caterpillar), from the larva to the pupa (or chrysalis or nymph), and from the pupa to the imago (or perfect insect). The earwig is no exception to this rule; but the larvæ, when hatched from the egg, very much resemble their parents, but they are of a lighter colour, have not any wings or wing-cases, their pincers are weak and almost straight, and their antennæ have only eight or nine joints. They shed their skins from time to time, increasing in size at each moulting. When they reach the pupa state they are still more like their parents, as they are provided with rudimentary wings and wing-cases.

The female lays her eggs, which are small, oval, and of a pale yellow colour, in the spring and early summer, under fallen leaves, stones, the bark of trees, or other sheltered places, in clusters of fifteen or twenty, and sits and broods over them as a bird would. In about a month the young are hatched, and there seems little doubt but that the mother continues to care for them, as they have been found seeking protection under her. Earwigs are a great source of trouble and annoyance to gardeners; they feed on the flowers and young shoots of many plants, particularly on those of Dahlias and Carnations, which they much injure. They are very fond of Apricots, Peaches, Grapes, Pears, and Apples, which they spoil by making large holes in them; they sometimes creep into Cauliflowers and render them dirty and unfit for use. Their presence in gardens is not an unmitigated evil, as they do not confine themselves entirely to vegetable food, but destroy large numbers of thrips, aphides, and some kinds of wild bees. They are very voracious, but feed only at night, creeping into some sheltered place during the day. Their natural enemies are small birds, toads, and some beetles, particularly the Fetid Rove-beetle, or Devil's Coach-horse. One of the ichneumonidæ is parasitic on them. The best means of destroying earwigs is to place near plants and to hang on fruit trees which have been attacked by them pieces of Reeds or the stems of Sunflowers, or any hollow stems, into which the earwigs are sure to creep, and from which they may easily be shaken and killed; the stem of the Sunflower is particularly useful, as the insects are attracted by the sweet pith.

The popular notion that earwigs creep into persons' ears at night-time is, I believe, entirely without foundation. Even if they did, it would be impossible that they could, as some persons assert, creep into the brain, as there is no passage from the ear into the head. S. G. S.

PROVINCIAL HORTICULTURAL EXHIBITIONS.

St. Neots, Hunts, is neither a very large nor a very populous town, but its inhabitants work well together, and in the matter of organising horticultural shows might teach a valuable lesson to places of much greater pretensions; this is the reason why I have ventured to refer to the matter here. The schedule appeals to the help and sympathy of all classes, and, as a consequence, brings together a large amount of produce, much of which is really excellent in quality and very creditable to the exhibitors. The main object of the promoters is, of course, to inculcate a spirit of generous emulation among the neighbouring inhabitants, but they do not confine themselves to this alone, as there are open classes admitting all competitors on payment of a small entrance fee. It is true the prizes offered are small, but there are a good many of them, and I have no doubt that the society hopes to be in a position to increase their value, and so draw exhibits from a greater distance to show their own people what others are doing. There are special classes for amateurs, farmers, market gardeners, ladies, cottagers, schoolgirls, and schoolboys, and the exhibits in the latter classes were exceedingly interesting, and the thoughts which such a competition inspires in the youthful mind are, I think, calculated to do much good and to lay a foundation for better things hereafter. I am not going to trespass so far as to ask space for the insertion of any lengthy reference to the prize winners in any of the classes, as that is a matter of merely local interest; but some of the vegetables, especially in the cottagers' and market gardeners' classes, were very good—notably the Potatoes and Onions, and amongst the cut flowers the Dahlias of one or two exhibitors would have taken prizes at any of the leading exhibitions. The collections of stove and greenhouse plants and Ferns were very creditable, and a plant of Stephanotis floribunda, exhibited on the occasion, was, I think, the best and cleanest specimen of the kind I have seen in or out of London. The competition of model gardens by schoolboys was very extensive; and, although most of the designs were familiar to frequenters of exhibitions where such displays are encouraged, there were not wanting evidences that one or two of the juvenile artists were breaking away from the square, formal patterns, and had designed their gardens with a freer and bolder hand. Most of the bouquets of wild flowers by schoolgirls were much too crowded. They will, no doubt, learn in time that fewer flowers and more foliage will place them higher in the prize list. E. Hobday.

Warm Exposures for Fruits, Flowers, and Vegetables.—From observations made in different parts of the country, I have come to the conclusion that the south, south-west, and west are the only exposures in a garden worth utilising for the culture of early crops of fruits, flowers, or vegetables. A south-east wall gets the full force of the sun when it shines from early morning till about 11 a.m., but it never experiences the intensity of the sun's rays like a west wall, which is always much the warmer of the two; and, besides, the crops on an east border are more liable to suffer from frost, because the sun shines upon the frozen plants before they are thawed; this they are sure to be on a west border before the sun reaches them. For producing early crops of such fruits as Apricots, Peaches, and Cherries—the latter of which do uncommonly well on a warm wall—there is hardly any position so favourable as the angle of a dwelling house facing the south-west. The heat radiated from both walls after twelve o'clock on a sunny day is often more than tropical, and greater than the temperature of an ordinary south wall. We have seen the thermometer record about 140° in the angle of a castle wall in the north. When early Roses are wanted, no better situation can be had for them. A good climber, like Gloire de Dijon, Maréchal Niel, or, indeed, any of the dwarf kinds that naturally flower early, produce flowers three weeks or a month earlier in such corners than elsewhere. It is the shelter from cold winds more than the protection from frosts which hurries vegetation.—J. S.

DRESSING AND EXHIBITING FLORIST FLOWERS.

This whole subject deserves thorough ventilation, and it should be discussed on general grounds, and without relation to individual opinions or classes of plants. Similar principles and practices, indeed, obtain in regard to most florist flowers. It has generally been held legitimate to remove any excess of parts, to regulate any misplacements, and to reveal any inherent beauty that might be accidentally hidden. The doing of so much can hardly be considered an undue interference with Nature, nor inconsistent with the principles of art, which strives to present its best to the beholder. No doubt flower dressings are often carried far beyond their legitimate limits. Faults and failings are hidden, deficiencies supplemented, and bad or indifferent flowers made to appear good by skilful manipulation. Such arts are mere flower millinery, not floriculture, though skill in the latter is not held to be complete by many unless a knowledge of the former be added to it. Now the dressing of flowers is one of those arts that possess a peculiar fascination to experts. Few who are adepts at it can help being tempted at times to carry it to excess. So powerful is this temptation, that it would probably be well for floriculture could the art of dressing be wholly abolished, and I have therefore the strongest sympathy with The Garden in its efforts to put down dressing. The idea, too, of showing Picotees, Carnations, Roses, &c., in vases or groups artistically or picturesquely arranged is a charming one, and seems simple and easy at first sight; but it is really less so than it seems. The great primary object of the present flower shows is to reward the best flowers, Roses, Picotees, Auriculas, Tulips, or what not, and the present uniform, inartistic, and ugly, if you please, mode of showing the flowers enables the best to win. All the conditions of showing being alike, the sole attention of the judges is concentrated upon the differences of merit between the flowers only. The best flowers are consequently far more likely to win than if the attention of the judges were turned aside into artistic or inartistic settings up or groupings. Every one has his own special standard of art or taste, and the worst flowers might often be the most artistically arranged, and would win in consequence. Such results would prove a sore discouragement to horticulture, and yet there is no doubt the present system of showing is most unsightly. The remedy is not its abolition, but the addition of other modes of showing. Retain the present mode of rewarding the best flowers without alteration; but, by all means, add prizes at all shows for the best baskets, vases, groups of Roses, Carnations, Pinks, &c., artistically arranged. It should also be a condition that each flower should appear with its own foliage or that of its family. It would be necessary to allow so much latitude, as, of course, it would often be impossible to cut sufficient foliage of choice varieties to make the flowers effective; but foreign foliage ought to be a disqualification. It is false alike to Nature and all art deserving the name. The rage for green colours has permitted its use by the highest authorities; but to place false foliage around flowers is to disparage as well as disown their own, and virtually to try to improve Nature in her very highest illustrations of art—that of blending and balancing flowers and foliage in one complete whole of matchless grace and beauty. The freer use of foliage would also dispense with white paper collars and circles, which only give a garish glare to the flowers. By combining more artistic modes of showing these flowers with the present methods of rewarding their individual merits, an additional interest would at once be given to flower shows, and no doubt the flowers themselves would be more highly appreciated and generally grown. Possibly, too, the way might be prepared for testing the merits of individual flowers on more artistic principles; much more of the plants would also be seen. A single flower laid flat on a circle of white paper gives no more idea of the grace and beauty of the Picotee than a single Wheat grain does of the stately grace and glory of the Wheat plant. The same holds good of Roses, Tulips, Narcissi, Gladioli, and other flowers. Note the difference, for example, between a bed or border of the latter, now in all their matchless beauty, and a stand of the same on the exhibition table, mostly far too scant of foliage. The difference is all against the artificial stand. But supposing a stand of single blooms of Gladiolus plastered down on paper cards; even the most devoted advocates of dressing would be shocked. Why? Why, indeed? Hollyhocks are often shown in single flowers, not spikes; why not Gladioli? And if not Gladioli, why Picotees? And if Gladioli can be judged in spikes, why not Roses, Carnations, and Picotees in bunches or bouquets?

D. T. Fish.

ANSWERS TO CORRESPONDENTS.

Arbutus Andrachne.—We are forming a garden in the north of Yorkshire, and would much like to know if you think Arbutus Andrachne would do well in this part of England. The soil is good, but the subsoil is strong clay. The Arbutus could be well protected from all strong winds.—Ada Godman. [Arbutus Andrachne will do well under such conditions, even in Yorkshire, provided it be fully exposed to the sun in order to ensure the ripening of the young growths by autumn.—Geo. Syme.]

Diseased Vine Leaf (B. Duffill).—The leaf which you have sent is badly attacked with thrips; a small greenish-white species seems to have done the injury.—W. W. S.

Melon Seeds Germinating Inside the Fruit.—This is not a very rare occurrence; it happens at times in the case of even the best flavoured and finest fruit. We have had at least fifty fine Melons this season which have developed this tendency, and no fault or flaw whatever could be detected in them. At present I can give no explanation as to the cause. I have never had so many examples of it as this season.—D. T. Fish.

Names of Plants.—*Young Student.*—1, Eupatorium cannabinum; 2, Knautia arvensis; 3, Solidago Virga-aurea; 4, Calamintha officinalis. *T.*—The specimen sent is a small variety of the true Mushroom. *D. R. & Co.*—Maltese Centaury (Centaurea melitensis). *M. E., Ipswich.*—1, probably Dracæna Youngi, but the varieties of Dracæna are now so numerous that it is impossible to say from a single and imperfect leaf; 2, Croton interruptum; 3, Dracæna rubra; 4, Gymnogramma Wettenhalliana. They will all succeed in a greenhouse during summer, but in winter they will probably become unhealthy, unless a little fire-heat can be given them. *Dr. H.*—Typha latifolia (the great Bulrush or Reedmace). *A. W.*—1, Chrysanthemum fœniculaceum grandiflorum; 2, C. fœniculaceum; 3, C. frutescens; known commonly as Paris Daisies. *A., Castlewellan.*—1, Rhamnus latifolius; 2, some Rhododendron, apparently closely allied to R. jasminiflorum. *L. C. J.*—Eupatorium ageratioides. *L.*—The Oak is Quercus sessiliflora, or a slight variety of it. *F. T.*—1, the Macartney Rose (Rosa bracteata); 2, Viburnum lantana; 3, Hibiscus syriacus; 4, Spiræa callosa *A. K.*—Ipomopsis elegans; 2, some Pentstemon. *Mrs. A. B.*—Meconopsis semplicifolia, leaves pale green, lighter on the under side than on the upper. *C. J.*—1, Hibiscus syriacus, fl.-pl.; 2, Hypericum calycinum; 3, some Escallonia, probably E. macrantha; 4, Common Arbutus; 5, probably Rhamnus Alaternus. *J. C. & Son.*—An Astrantia, and probably A. major.

Correspondents sending fruit to be named should send at least three of each kind. The variation of fruits, even on the same tree, is so considerable, that this would very much facilitate ascertaining the correct name. This applies to a Pear sent by "T. B." which it is impossible to name from the single fruit sent.

Mushroom-eating Beetles.—I have a Mushroom bed being completely destroyed by hundreds of beetles. They come out from the bed about eleven o'clock, and disappear soon after three p.m., having, during that time made a good meal off the little Mushrooms. The same beetles, I am told, attack Rose trees, and as we have over 200 standards in the garden, I am particularly anxious to get rid of them.—Fernhurst. [The beetles sent are two common species generally found in or under the manure of horses and cows. The black one is Aphodius hæmorrhoidales, the black and red one Aphodius fimentavius. They have probably been introduced in the manure of which the Mushroom beds are formed while in the grub state, and then a good opportunity occurs of destroying them.—W. W. S.]

Potato Fungi.—I have sent a few Potatoes covered with a cobweb-like substance which rots the Potato. The variety is Scotch Regent. Can you inform me what the substance in question is, and what I can do to prevent its occurrence? I have about an acre of Potatoes, the middle of which only is affected; the rest are good and sound. The ground last year was cropped with Lucerne, and it has not been under Potatoes before for more than twelve years. I thought of dressing the part affected with lime. Do you think that would stop the disease?—J. D. [The cobweb-like substance is the mycelium of the fungus known as Rhizoctonia crocorum, frequently found on the bulbs and corms of the Crocus, Gladiolus, Narcissus, &c. Sometimes it attacks Asparagus, Potatoes, and other plants, but we have never before seen such an abundant crop on Potatoes as in the material sent to us by you. Lime is frequently fatal to fungus growths.—W. G. S.

Making an Asparagus Bed.—"H." (p. 210) had better bastard trench the ground intended for his Asparagus bed, removing the "rab" from the lower spit if the spade comes in contact with it; this will give a depth of 24 in. of soil which will be sufficient if well enriched with good stable manure, decayed turf, and a liberal sprinkling of crushed bones in each trench. Our method of bastard trenching, which we prefer to bringing the poor subsoil to the surface, is, to commence with a trench 2 ft. wide, taken out to a depth of 12 in., and wheeled to the end of the ground to fill in the last trench, the manure being first placed on the ground in heaps at convenient distances apart. In the bottom of the first trench the workmen put in a good coat of manure and dig it well down, sprinkling more manure on the fresh-turned soil before the top spit from the second trench is put on it. After removing the top spit from the second trench, the loose soil left by the spade comes to the surface of the first trench; this method brings the middle soil to the surface, the surface soil to the middle, and the subsoil remains at the bottom, having been well broken up and enriched with manure. Towards the end of March or beginning of April the ground will have subsided and be ready for planting. The Asparagus may be planted in shallow trenches if intended to be grown on the French system, or on the surface if it be grown in the usual way, simply spreading out the roots, and covering them with 5 in. of light, rich soil; place each plant 2½ ft. apart in the row, the rows being 4 ft. asunder; good strong two-year-old plants may be planted as soon as they have started into growth 2 in. or 3 in. long, planting those which have the strongest shoots and discarding those with weak ones. At the commencement of the third year after planting (provided the plants have grown well) some Asparagus may be cut, but the cutting must not be severe, and ought to cease early if a strong and permanent bed be desired. A full supply should not be cut until it is four years planted. We use one-year-old plants, and wait until the commencement of the fourth season before cutting. A good dressing of manure in the autumn applied to the crowns of the plants, with a sprinkling of salt in the latter part of March, and the same of nitrate of soda a month later, which may be repeated again in May, gives the best results.—W. Allan, *Gunton Park, Norwich.*

Nymphæa odorata minor.—Will this grow in a large china basin? Does it require to have the water changed? and what kind of soil must I put in for the roots?—Ada Godman. [This may be grown in any vessel, if it be of sufficient depth and width to allow room for the full development of the leaves. The soil, which should be laid at the bottom from 4 in. to 6 in. in depth, should consist of one part fibry loam, half part well decomposed leaf-mould, and half part river sand and gravel. The vessel should be quite filled, and should be made to overflow daily by watering with a fine-rosed watering-pot, as this removes all floating Confervæ, &c. A layer of fine gravel, spar, or similar material should be laid on the surface of the soil, in order to keep it from mixing with the water.—W. G.]

Failure in Parsley.—"A. Z." (p. 210) need not be surprised at his Parsley failing after growing it continuously on one piece of ground for ten years; there is no crop grown that will not deteriorate and finally die off altogether if fresh soil be not given to it. If "A. Z." will sow a row as an edging every year in March, selecting a fresh position each time, he will get abundance of Parsley from spaces that could scarcely be utilised by any other crop. One of the greatest drawbacks connected with small gardens is the lack of attention to the most ordinary precautions as regards rotation of crops; because Parsley, Horseradish, Artichokes, and similar crops will exist in a kind of semi-wild condition, good culture in their case is almost entirely ignored. Try fresh ground, give the plants ample space, and the result will be satisfactory.—J. G.

—— "A. Z." (p. 210) should sow his Parsley on a fresh spot; the land (to use a common expression) is Parsley-sick; he might sow at once. The roots are probably attacked by insects, but they are a consequence of, rather than the cause of, weakness. If Parsley must be grown for a series of years on the same spot, it should be treated as a perennial, and have all flower-stems pinched off the moment they appear. I have, as an experiment, kept Parsley in good producing condition for five years by carefully selecting and weeding out weakly plants, allowing plenty of room, and by a liberal use of soot mixed with fresh soil as a top-dressing. An amateur friend has some Parsley roots in his garden that he says are twenty years old.—E. Hobday.

—— "A. Z.'s" border is Parsley-sick. Fancy repeating Parsley for ten years on a bed alongside a water channel, probably at times flooded with hot sewage! The wonder is not that very little Parsley has lately been gathered from that bed, but that any ever consented to grow there. Parsley should never be repeated on the same ground, to say nothing of ten repetitions. Few crops pay better for a bit of fresh ground annually than Parsley. The ground should be rich, deep, and dry, as well as fresh; ashes and soot are the best manures. These make matters disagreeable for the worms where they abound. But "A. Z." must change the place of his Parsley bed at once.—D. T. Fish.

Wintering Half-hardy Bedding Plants.—"V." (p. 210) will find that most kinds of half-hardy bedding plants are readily struck from cuttings inserted about this time (September), but they succeed much better if struck earlier, say in the first week in August. All sections of the Pelargonium family, including the variegated and tricolor kinds, will root readily in pots or boxes filled with light, sandy soil and placed in the open air, or they may be inserted in the open border, and taken up and potted about the beginning of October. In the absence of a greenhouse or glass structure, they may be wintered in a light room as near the windows as possible, setting them back during severe frosty weather, and giving very little water during the dull days of winter. Frost should, of course, be excluded by fire-heat or otherwise, although 3 or 4° will not injure them. Verbenas, Calceolarias, &c., may be inserted in the form of cuttings, in a mixture of sand and finely-sifted leaf-mould, using well-drained pots some 6 in. in diameter, and these should be placed in a frame, which should be kept quite close until the cuttings are fairly rooted, when air may be freely admitted whenever the weather is fine. Such plants may generally be wintered in an ordinary garden frame, but care must be taken to cover the frame with mats or litter during severe frosty weather, when water should be given very sparingly, and only when the soil is found to be dry. Those not in possession of glass structures should trust more to annual plants for furnishing their flower beds than they usually do. Annuals may generally be sown where they are intended to flower about the end of April or early in May, or, what is better, they may be sown in pans, pots, or boxes about the beginning of April, and placed in a frame on a slight bottom-heat, pricking the young plants out when large enough into other pots or pans, and gradually inuring them to the open air, finally planting them in their beds soon after the middle of May. Many annuals make excellent bedding plants. Nothing can surpass in beauty some of the varieties of Phlox Drummondi, Dianthus Heddewigi, and its varieties, some of the dwarf Marigolds, Asters, Stocks, &c., all of which will remain in great beauty throughout the greater part of the season.—P. G.

Phloxes Abroad and at Home.—In answer to "A. V." (p. 210), I can only attribute the superiority of the Phlox in France to the influence which a more genial climate and somewhat higher temperature exercises upon its growth. There is there a comparative absence of those periods of wet weather, accompanied by chilly nights, which we in England experience during most summers. The same causes which promote healthy growth will also induce perfection in the way of colour. I have seldom, for instance, seen the dwarf Phlox in this country with colours so brilliant and well defined as at Erfurt, where many acres of them are grown for seed.—J. Cornhill.

—— I believe the climate on the Continent in many places to be less favourable to Phloxes than that at home, for this reason, Phloxes receiving ordinary attention, *i.e.*, planted in mixed borders or beds, may always be noticed to be stronger in growth and finer in flower in cold, wet, and upland situations than in lowland and drier districts in the south. It is probably the deep, rich, and moist soil that makes the difference in the appearance of Phloxes abroad. The ground is made artificially very rich, receives plenty of water, and is often mulched. The brightest collection of Phloxes I have ever seen was that of the late M. Lierval, whose garden near Paris was destroyed during the Franco-Prussian war. The ground in which these Phloxes grew was prepared something like that for Celery, with plenty of well-rotted manure, and it was always moist and well mulched. —K.

Early Peaches.—I would recommend "A Subscriber" (p. 210) to grow Hale's Early Peach, an American variety, and Early Louise for his earliest sorts. Early Beatrice under glass is worthless for anything but its earliness, being undersized and watery in flavour. No better variety can be grown under glass than the Early Grosse Mignonne, for it is a sure bearer, of good size and flavour, and it may be ripened early in August without much forcing. Two new varieties of early American Peaches are highly recommended there; they are said to be as early as Beatrice, and better flavoured, and, if so, they must be worthy of a trial in our climate. Early York is an excellent Peach, and Dr. Hogg, for a mid-season Peach, is likewise to be recommended. The Alexandra Noblesse is like the old Noblesse in colour and flavour, but, unlike it, it is not subject to mildew.—W. Tillery.

—— Among other questions asked by "A Subscriber" (p. 210) I find one in reference to the quality of the Alexandra Noblesse Peach. It is superior to the Noblesse at its best, and higher praise is needless, perhaps impossible. This Peach is of the highest specific gravity, and is of that creamy-white hue which is hardly ever dissassociated from the highest quality. I have not yet grown Dr. Hogg as an early Peach under glass; but Early Beatrice is far inferior to the Early York in quality; and the latter, though three weeks earlier than such magnificent Peaches as Royal George, Violette Hâtive, Noblesse, Stirling Castle, Barrington, and others, is not to be compared with any of them either as regards size or quality.—D. T. Fish.

Eradicating Buttercups.—I want to know by what means I can get rid of a very strong plantation of Buttercups which has been increasing yearly in a field in my pleasure ground, driving out all the best Grasses.—J. E. Gray.

OBITUARY.

Mrs. Osborn, of the Fulham Nurseries, died on Friday, the 30th ult., aged sixty-one, after an illness of six months' duration. Mrs. Osborn was widely known to many of our readers, having, after the death of her husband and his brother, had sole charge of the business for several years. The nursery is now we need scarcely repeat, carried on by her son, Mr. Robert Osborn.

No. 356.] SATURDAY, SEPTEMBER 14, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

PELARGONIUMS AS WINTER BASKET PLANTS.

Within the last few years Pelargoniums have been largely grown as winter-flowering plants, their brilliant colours being very effective at that dull season of the year. Conservatories, however, as a rule, do not afford them sufficient light when set on shelves or stages, and therefore, in order to remedy that evil, I grow my Pelargoniums for winter flowering in baskets. Treated in this way, and suspended from the roof, they receive a maximum of light; the air about them is kept in active circulation, and the result is a healthy flowering condition all through the winter. The baskets in which they are to be placed should be fitted with two sets of movable shelves, in order that they may be always kept gay, and they should also be dressed outside with Ferns, Mosses, or Echeverias, so as to give them a fresh and interesting appearance. First of all, place in the baskets a layer of Moss from the woods with the green side downwards; then fill in a few inches of soil suitable for the plants to grow in. Introduce the roots of the latter from the outside by making holes through the Moss with the fingers; then shake the soil through the roots and press all firmly down. If Ferns be selected the baskets should be dressed in the spring and hung up in a shaded moist stove or Fernery, and treated in the ordinary way until they are well furnished. The Pelargoniums for winter blooming should be propagated in April or not later than May, when cuttings of them should be inserted singly in 3-in. pots. The number required should, of course, be calculated beforehand, and when they are rooted, if the baskets be not properly furnished with Ferns, or whatever else has been used, the Pelargoniums may be given a shift and kept growing on. Meanwhile, the plants used for dressing the outsides of the baskets will have established themselves and will be in a fit state to be gradually hardened, so as to withstand a lower temperature, by which time the Pelargoniums will be ready to be transferred from the pots to the baskets. The first row should be planted so as to lean over the sides, and each succeeding row should have a more vertical position, so as to give the basket when finished a globular form, but not so much so as to appear too formal. It was later than this (September 12) last year when I filled my baskets, but, nevertheless, the experiment proved eminently successful. The conservatory in which they were placed was kept quite cool up to Christmas, during which time the Chrysanthemums were in flower, and the baskets of scarlet Pelargoniums played no unimportant part in its decoration. Even after the turn of the year, when a variety of other subjects took the place of the Chrysanthemums, and when the temperature of the conservatory had to be raised a few degrees, the Pelargoniums with the increased warmth seemed to improve so much in appearance, that they were quite fresh in February. The varieties used were Lord Derby and Jean Sisley, both of which did equally well, the latter being even more conspicuous than Lord Derby, owing to its charming white eye—a striking characteristic belonging to it. W. Hinds.

Otterspool.

MARIGOLDS AS AUTUMN BORDER FLOWERS.

In writing of the African and French Marigolds it is necessary to dissociate them from the yellow biennial kinds that are so common in cottage and old gardens, and that are so gay in the early part of the summer. These have not hitherto been classed as florist flowers, but the annual kinds have long been so designated, and well deserve that distinction. There are few double flowers that display more fullness, rotundity of form, and evenness of petal than is seen in a good African Marigold, whilst the pretty French kinds have flowers in which the petals are so evenly and neatly arranged that no expert in dressing could find one out of place or improve upon the form of the flower. As exhibition flowers the Marigolds are not now largely encouraged. What they get in that way is chiefly found amongst the old florists in the north, where the Marigold is yet cherished, but in the southern districts it would, indeed, be a rare case to find prizes offered for flowers of either kind. In the African Marigold the essential features of show flowers are size, form, and evenness of petal; the larger the blooms, if of perfect form, the better. A stand of twelve flowers admits of little variety, and probably that is a weak point in an exhibition sense. Shades of yellow only are found, but these vary through pale lemon, straw colour, yellow, and orange, some half-dozen shades at least, and therefore if all these be included, and the flowers be good, a stand need not lack attractiveness. It is as an autumn border flower, however, that the African Marigold is valuable; here it is brilliant and effective, not planted in masses, but in twos and threes. Where supported with sticks, to keep their heavy blooms from being blown to the ground, they serve to light up dark-coloured shrubs and surroundings admirably. It is simply impossible to avoid admiring a fine African Marigold bloom; but when a plant has several large flowers on it fully expanded, it commands attention. The French Marigold not only affords more variety of colour, but also variety of habit, the old, coarse-growing, strong kinds sprawling about all over the ground and needing, at least, a yard square of space for growth. These are very useful to plant out amongst shrubs where there are large vacant spaces that look all the better when filled with something, and they do well for the filling of large beds in old gardens or public parks, and thus growing as they list make a good show. In these tall-growing kinds have hitherto been found the maroon and yellow-striped flowers so favoured in the north for exhibition purposes. That these, though small, are the prettiest of all the French flowers there can be no doubt, the markings being so distinct and beautiful; but a good strain of these is by no means common, if what are generally seen growing in gardens afford correct evidence. The Marigold wants plenty of keeping up to the proper standard of excellence, as it soon runs back, though those who grow it only as a garden plant are not concerned about the quality of the flowers. The most beautifully striped blooms I have seen this year are found not on the old tall form, but upon plants of medium height and less robustness, every flower on which presents the true striped form; if these can be fixed to come true from year to year they will prove a great advance over the old kinds. But beyond these there is growing up steadily a striped strain, the plants belonging to which are dense and compact; they form stout, erect bushes about 12 in. in height, and as much through. The flowers in this case are not yet quite so perfect as are those in the previous named section, but when fully fixed, as a season or two will inevitably effect, this strain will supersede all others, as the flowers are larger and fuller, and the plants much more ornamental. Exhibition striped Marigolds are selected not for size, but entirely for marking, and I am not sure that the expert in dressing does not here occasionally display his manipulating powers and remove petals, in order that only a certain number may be seen, and these the best marked. Those who admire the French Marigold solely for its decorative qualities will find in these dwarf forms capital border, and even bedding plants. In this last respect they have one drawback, as let the strain be ever so good, the best that can be had, at least one-fourth of the plants will produce single or semi-double flowers, and these should of course be destroyed. If planted out singly in borders this defect is of less moment. The beautiful yellow kind called aurea floribunda gives, perhaps, the least number of single flowers, and as a yellow bedding plant this Marigold is unrivalled; the plants are even and they produce a mass of golden flowers. Seed may be sown in any cool house, or frame, about the middle of April, and the seedlings will be ready to transplant about the third week in May; the stronger the plants are before being dibbled out the better, as slugs have a decided liking for the stems. If lifted from the seed bed and laid in by the roots first for a week or ten days in the open ground, they harden, and when planted out are less liable to be eaten off. A. D.

USEFUL PLANTS FOR CARPET GARDENING.

In planting the flower garden according to the arrangement required by carpet gardening, which is so much in vogue at present, the filling in of the groundwork, and the materials of which that groundwork is formed, constitute an important, although to a certain extent subsidiary, part. For this purpose the Gibraltar variety of Mentha Pulegium has been much used and strongly recommended. My experience, however, is that it is liable to grow irregular and tufty. Now we have amongst our British plants, though by no means a common one, in the Herniaria glabra, a plant not only infinitely better adapted to this purpose in its perfectly prostrate growth, but in its much neater and smaller foliage, added to which it possesses a permanent character, and has not the habit of dying out in the centre of the patch, even though cultivated for years in the same place. As regards propagation, possibly it may not be as rapidly increased as the plant I name or some of the others used for this purpose, but its increase is by no means difficult either by division or by means of cuttings, and, once established, it may take part alike either in spring or summer gardening. Its flowers are small and green-coloured, and consequently do not interfere in the least with its value for carpet gardening.

Another plant nearly as useful is Veronica læta, or Milky-white Speedwell. This is equally prostrate in growth, and has equally small foliage of a slightly darker green, but, though quite devoid of blossom during the summer, it is in the spring suffused with myriads of its white flowers, which give it a special value as a flowering plant for the spring garden. Unlike the Herniaria, it should be divided and replanted every season when the summer filling of the flower beds is being carried out. Both of these plants I have recently seen put fairly to the test in a little terrace flower garden recently formed at Brantinghamthorpe, in our neighbourhood.

Another plant which I would strongly recommend for a similar purpose is the Acæna microphylla, more generally known under the specific title of Novæ Zealandiæ, not, however, as a green, but as capable of forming a beautiful bronze groundwork—a sort of neutral zone—such a zone as would contrast charmingly with the light, glaucous green foliage of the Echeverias; and not only would it be acceptable for its neat foliage, but equally so for its singular flower heads, produced in abundance throughout the latter part of the summer—each head bristling with miniature blood-stained bayonet points. The introduction of such a plant, wherever the soil is of a light, sandy character—an essential which, if not naturally present, can always be extemporised—would assist by its novelty to remove that stain on carpet gardening, namely, that universal sameness, which every one must admit to be its great defect. The Acæna may be raised from seed, which it produces in abundance, or increased by division. J. C. Niven.

Hull Botanic Gardens.

Succulents in the Flower Garden.—I can well conceive that the bedding plants in Hyde Park or anywhere else, where Pelargoniums, Lobelias, Verbenas, and others are used, must for some time past have looked wretched. With rains of a heavy character and absence of sunshine comes a miserable and bedraggled appearance that puts an end to all beauty. I have often expressed a belief, and this season has the more convinced me in the same, that the most effective and constant designs are those in which succulents are largely used, aided by such fine foliaged plants as will remain constant and regular throughout the bedding season. The most beautiful effects at Heckfield—where bedding plants are, if possible, even better than usual—is found in the use of such plants as Sedums, Echeverias, giant Sempervivums, and Mesembryanthemums amongst succulents, and of Golden Feather, Alternantheras, and the dwarf Penny Royal in leaf plants. Where plants such as these are chiefly in use, the weather affects the bedding only in the smallest degree; indeed, such plants usually look brighter after rain than at any other time, and the labour needed to keep these plants in neat order is but little. Weeds can hardly find foot-hold, so well is the ground covered, and there are no dead leaves or flowers to gather up. Beds so planted look as charming at the end of October as at midsummer. A small grave garden planted with such hardy plants has for a long time, and will for some time yet remain very pleasing. A margin of dwarf Penny Royal over which the hand-shears is occasionally run to keep it neat, and inside of this a series of whole and half-diamonds formed with single lines of Echeveria secunda glauca, the sections carpeted with Sedum lydium, green; glaucum, silver; and acre elegans, cream, will, with a few large pot plants of Echeverias and Pachyphytums, have a fine effect.—A. D.

Clove Carnation Miss Arkey.—This fine variety was sent to me last spring, from Bedale, by the rearer of it (Mr. W. Culverwell). Its flowers are pure white, with smooth, stout petals, of excellent substance and agreeably fragrant. The plant possesses a good constitution, and is in every respect a most desirable variety to cultivate. This, and an unnamed variety from Russia, bearing bright, rosy-salmon flowers, are my favourite Cloves. The latter has large and very stout petals, somewhat slightly serrated on the edges; it is remarkably free, and possesses an excellent constitution. It is known in my garden simply as the Rose Clove.—D.

Apios tuberosa.—Than this there are few hardy plants better suited for covering arbours or for rambling over shrubs, &c.; the fragrance of its flowers, which much resemble that of Violets, Pervades the atmosphere round it, especially after a shower. The blossoms are of a reddish-brown colour, densely arranged on spikes 3 in. long, produced freely from the axils of the leaves in which the leaflets are in three pairs with one terminal. The roots assume a tuber-like appearance, and afford a ready means of propagation.—A.

Wallflower Seed.—If the experience of growers of the Wallflower in large quantities elsewhere is the same as that of growers for market and for seed here, the seed crop of the Wallflower will this year be a small one indeed. It is worthy of note that a comparatively mild open winter resulted in almost entire destruction to large breadths of this hardy plant; but it is probable that the actual mischief was done when the severe frosts of March so greatly injured the early fruit blossom, although the effects were not seen until long afterwards. Of two pieces of yellow Wallflowers grown here in a warm, sheltered place, and which flowered freely, not a plant was left alive to carry a pod of seed; and amongst the dark blood-red plants the damage was almost as bad here, and quite as bad in many other gardens. It is further possible that the heavy rains of the spring assisted to produce this evil, as the Wallflower certainly thrives better in drought than excessive wet. It is to be desired that such a misfortune to one of our most favourite hardy plants will not again occur.—A. D., *Bedfont.*

Indian Balsams.—At this season these beautiful annuals form a very attractive feature. If left to themselves they seed freely, scattering their seeds far and wide, and they will germinate and establish themselves freely unaided. For shrubberies by the side of woodland walks, or amongst dwarf kinds in borders, they will be found invaluable. The best kinds are, the gland-bearing Balsam (Impatiens grandulifera), which attains a height of 6 ft., and bears numerous flowers varying in colour from white to a deep rose. This kind will soon take possession of shrubberies if not checked, but it is seen to best advantage as isolated specimens. The Long-horned Balsam (I. longicornu) is very beautiful. It has the habit of the last, but the lower part of its helmet-shaped flowers is of a bright yellow marked by transverse lines of dark brown; the upper part is rose colour. The spur, as its specific name implies, is much longer than that of its neighbours, which marks it distinctly. Royle's Balsam (I. Roylei) is a much dwarfer kind than the preceding, and has blossoms of a deep rose colour. The Crested Balsam (I. cristata) is very distinct in its leaves being very sharply toothed; it has light rose-coloured blossoms. —W.

Border Pentstemons.—Mr. Douglas (p. 216) seems in doubt as to the original species from which the present race of garden Pentstemons have sprung. I presume they are from the old Pentstemon gentianoides, a fine border plant in days gone by, the first good forms of which were coccinea and alba. Now the family is a wondrously varied one, the flowers large, of fine form, and beautifully coloured and marked. I do not agree with Mr. Douglas as to the time of sowing the seed, as the Pentstemon, if it flowers ever so early, seldoms ripens its seed before the beginning of September, and it would be too late to sow them, except to be troubled to keep the plants in a frame or house all the winter, whilst to plant such small plants in the open border late in the autumn would be to court certain destruction. If seed be kept over the winter and sown in a pan or box under glass early in spring, and the plants got out into the open ground in May, they will begin to bloom in August, and will be full of flower up to the end of October or later. Next year these same plants will bloom in great profusion from May to August, and thus, with a succession of seedling plants, the flowering time of the Pentstemon may be made a long one. Seed strains of the Pentstemon are now so good, that it is useless to trouble oneself about named kinds. A good strain will invariably reproduce all the qualities of the seed parents. A rich soil, moreover, is not necessary. I have grown them in masses for years in common garden soil, and they will even thrive in ordinary mixed borders. In short, where the Snapdragon will grow so will the Pentstemon.—A. D.

NOTES OF THE WEEK.

Odontoglossum coronarium.—We have received from Sir Trevor Lawrence a magnificent flower-spike of this Odontoglossum furnished with twenty-five blossoms. It measured 6 in. in width and 12 in. in length, and the flowers, which are of a warm cinnamon brown colour with a yellow lip, were arranged closely but gracefully on the spike. Though not particularly rare, this Odontoglossum is seldom seen in flower—much less in the beautiful condition which the specimen in question presented.

The Three-leaved Bouvardia (B. triphylla).—One of the best greenhouse plants in flower at the present time, and, indeed, almost continuously is this Mexican Bouvardia. It is seldom met with in gardens, but a more useful shrub would be difficult to find, as it is easily grown in a cool house where actual frost is excluded in winter. It grows from 1 ft. to 3 ft. high, and has lance-shaped leaves arranged in whorls of three on the stem. The blossoms are borne profusely in terminal clusters, and are tubular, about 1½ in. long, and of a bright orange-scarlet colour.—W.

Brownea erecta var. princeps.—This is about to flower at Lakelands, near Cork, for the first time, it is believed, in Europe. The inflorescence, or flower-spike, differs in form altogether from that of any member of this family that has hitherto bloomed in our stoves, being, when I saw it about ten days ago, a straight stem with many lateral branchlets of apparently white woolly-looking buds of some 18 in. to 24 in. in height, and likely to grow still higher, rising out of the centre of a whorl of handsome leaves on the top of a straight stem of more than 20 ft. in height. This novelty will not be actually in bloom for a week or more to come, when I may have something more to say thereanent.—W. E. G.

Arundo conspicua.—There are some superb tufts of this now in bloom in Mr. John Waterer's nursery, at Bagshot, where it seems at home in the peat soil. The plumes are as high as those of the Pampas Grass when full grown. This New Zealand Arundo is indeed a precious gain for our gardens and well worth growing as a conservatory plant in tubs where the climate or soil will not permit of its healthy growth out-of-doors.—V.

Argemone hispida.—This fine, new, hardy plant is now in flower at Kew. It resembles A. grandiflora, figured some time ago in the "Botanical Register." It grows about 2 ft. high, and has glaucous, light green, spiny leaves. The blossoms are borne in succession from the tips of the branches, and are about 4 in. across, with broad divisions of thin texture and snowy whiteness, a tuft of bright yellow stamens being in the centre. It is a very desirable plant, and one which, when less rare, will inevitably become popular. It is a native of California, and, doubtess, will prove quite hardy.—A.

Canna iridiflora hybrida.—This is one of the noblest of Cannas. Its leaves are as large as those of a young Musa, and it is dwarfer and more compact in habit than most Cannas. Its flowers are large, drooping, and of a bright rose-magenta colour. It is, as yet, scarce, having been lost to cultivation for some years. It grows well at Chiswick, both in pots and in the open ground. Isolated groups of plants of it on lawns, or standing out boldly in front of shrubberies or in similar positions, would be most effective.

Showy Hardy Flowers.—We have received from Mr. Ware, Tottenham, cut blooms of some of the most showy hardy flowers now to be found there. Amongst others are branching spikes of Helenium autumnale, furnished with upwards of thirty bright golden blossoms, each nearly 4 in. in diameter; also the golden-flowered Aplopappus ciliatus, the white variety of Chelone obliqua, and Eriogonum racemosum. In addition to these we have strong spikes of Polygonatum verticillatum, furnished with bright claret-coloured berries; also handsome spikes of the coral-coloured fruit of the common Lily of the Valley. With these were likewise Asclepias incarnata, well furnished with rosy-purple flowers, and Leucanthemum lacustre, with showy white flowers, a plant well worth a place in shrubbery borders or in the wild garden.

Tropæolum speciosum in Devonshire.—Much has been written about the growth and flowering of this plant, which in some places seems to be somewhat uncertain. With me it grows most luxuriantly amongst Rhododendrons, over which it scrambles. This year I had some tops of young Larch trees about 8 ft. or 9 ft. high placed for it to climb up, and from which it now hangs in beautiful festoons, its purple-coloured berries forming a fine contrast to the flowers. Than this no plant can be more easily propagated. This year I raised about 100 from one plant. About the beginning of May, as soon as the young shoots are well through the ground, carefully take them up with a steel fork, following out the underground stem as far as possible; this will branch off into other stems. Take up the required quantity, cut them up into pieces about 1½ in. long, and plant them in light, rich soil in pans or boxes (the same as one would bulbs of Gesnera), and place them in a cold frame. In a fortnight or three weeks they will have grown up strongly, and should be potted off in 4-in. or 5-in. pots before they become entangled. Put a stick 15 in. or 18 in. high to each plant, which will be fit to finally plant out the same summer or autumn. The young tops when taken up should be at once potted off with 1 in. or 2 in. of root. It is difficult to get much seed unless daily watched, as birds eat it as soon as it changes colour. This Tropæolum is, in short, a plant that only requires to be better known to be generally grown.—John Garland, *Killerton, Exeter.*

We have received a further consignment (Parts VI., VII., and VIII.) of Mr. Meehan's "Native Flowers and Ferns of the United States," noticed by us (p. 122), and are glad to see that so interesting a work progresses satisfactorily. It is excellent in all ways.

A Good White Bouquet Dahlia.—For vases or bouquets the pure white flowers of Dahlia Little Beauty are among the most useful at this season of the year. The plant grows rather tall, but blooms with great freedom until late in autumn.—C. S.

Chrysanthemum frutescens aureum.—This yellow-flowered form of a well-known plant is remarkable for its abundance of bloom when well grown either in pots or in the open ground. It does not grow quite so strongly as the type, and its flowers, which are of a delicate sulphur colour, are well adapted for cutting for vases or bouquets. It is now blooming in quantity in Messrs. Veitch's nursery at Chelsea.—S.

Tillandsia zebrina and fulgens.—Both these Tillandsias are now being grown in large quantities by Mr. Wills, at his Anerley Nursery, for decorative purposes. Their foliage, which is in itself effective, withstands the heat of rooms lighted with gas without sustaining much injury, and when furnished with large brilliant scarlet spathes and blossoms, they are reckoned amongst the most effective and useful of decorative plants.

The Rockwork at Chiswick.—The rockery recently made in front of the large Vinery in the Royal Horticultural garden at Chiswick is a great improvement. It is now well planted, and when the different plants get well established it will form one of the most interesting features in the garden. The plants with which it is furnished are not wholly rock plants properly so-called, for, in addition to Sedums, Saxifrages, and other plants usually grown on rockwork, choice small-growing Conifers and other plants which succeed best in an elevated position are introduced here and there in suitable places. Tuberous-rooted Begonias also are planted on the sunny side, and the stately-looking Lobelia cardinalis and L. speciosa seem quite at home on the summit of the mounds. Rock gardens such as this are highly interesting, and much better adapted for small places than beds filled with scarlet Pelargoniums and Calceolarias.

Phlox Drummondi.—Messrs. Carter & Co. have sent us a collection of blooms of this useful garden annual. In size, colour, and variety they excel any we have hitherto seen, some of the individual blooms being as large as a florin. The flowers vary in colour from white, yellow, mauve-purple, and rose, to the deepest crimson, and there are also some very beautiful striped kinds. The easy culture, as well as the long-flowering qualities and attractiveness of Phlox Drummondi and its varieties, should gain for them more extensive culture in both large and small gardens than they at present receive. Nothing scarcely can equal a good mixed bed of dwarf Phloxes, and, if planted in rich soil, they will flower from June till frost sets in.

A Good White Pelargonium.—White flowers amongst zonal Pelargoniums are always valuable for bouquet making, and they may be had, with little trouble, every month in the year. The greatest difficulty, however, has hitherto been to obtain a kind which would flower freely, as most white Pelargoniums of the Madame Vaucher type are strong growers and shy bloomers, especially in a young state. Jean d'Arc, now finely in flower in the Chiswick collection, however, promises to supply this want. In habit and leaf it closely resembles the well-known pink Christine, whilst its flowers, which are produced in great profusion, are large, well-formed, and of the purest white. During winter this Pelargonium would be especially valuable, and any one having good plants of it, the wood of which is well ripened, would have no difficulty in obtaining a good supply of bloom during the dullest months of the year.

Delphinium Victory.—Under this name we find a beautiful double-flowered Delphinium in Mr. Parker's nursery, Tooting—indeed, one of the best of double-flowered Larkspurs; its racemes of flowers are 2 ft. in length, the blossoms themselves being very double, and of a brilliant blue, shaded with purple.

NOTES FROM KEW.

Hardy Shrubs.—Somewhat similar to Escallonia floribunda, which has already been noted as a most valuable flowering shrub, is E. montevidensis, from La Plata; the leaves are very finely serrated, and the white flowers are produced in large panicles, the individual blossoms, however, being hardly so large as those of the first-mentioned sort. The late-flowering season of E. montevidensis also adds to its value. Solanum jasminioides, a climbing, shrubby kind from Rio Grande, has pleasing, light green foliage, and twigs terminated by pendulous clusters of pure white blossoms, in the centre of each of which is a golden-yellow cone formed by the stamens. This is an elegant and graceful plant, well worth a sheltered spot on a wall, &c., in any of the southern counties, where it cannot but do well and be much admired. A pretty Myrtle (Myrtus mucronatus) is now in flower on one of the walls; the small, dark green, pointed, Box-like leaves afford a good contrast to the white flowers. Grabowskia boerhaavifolia, from Peru, is a bush belonging to the Solanum family; the small leaves are very glaucous—in some specimens almost as much so as those of Atriplex Halimus—and the flat flowers are whitish, with a bluish or dark-coloured mark at the base of each of the five divisions of the corolla. Gaultheria nummularioides, a pretty little creeping shrub from the Himalayas, is a much less plant than the well-known Partridge-berry of North America (G. procumbens); it has round, ciliated leaves—the under surface of which is covered with hairs—and shortly-stalked, bell-shaped, pendulous flowers of a deep red colour. G. carnea has very small, glossy, toothed leaves and white, fleshy berries. Heimia salicifolia, a Mexican shrub of erect habit, has pretty, smooth, Willow-like leaves and yellow blossoms; at times this gets killed down to the ground by wet and frost during winter, but it always springs up again readily from the root and flowers freely.

Hardy Herbaceous Plants.—Climbing amongst low shrubs on the dwarf wall of one of the houses are some specimens of a Cape bulb (Bowiea volubilis). This very strange plant, although allied botanically to the Drimias and Scillas, is totally unlike them; indeed, in general appearance, it exhibits no resemblance to any other plant whatever. Possessing little beauty, it is one of the most curious plants ever introduced into Europe, and consists of little more than a round, fleshy, green bulb, from the apex of which springs yearly a slender, twining, light green flower stem, 6 ft. or 8 ft. in length, which, below, throws off an abundance of much branched, curving, flowerless branches, and above bears numerous small, greenish-white flowers. For the rafter of the cool greenhouse the long, twining flower stems of this plant will excite attention, even if only for their being so totally different from anything else in the vegetable kingdom. Ophiopogon spicatus, from China and Japan, is another Liliaceous plant worthy of mention; it has narrow, sword-shaped leaves and spikes of violet-blue flowers. The type attains a height of about 1 ft., but a stout-growing variety is nearly double that height. Oxalis lobata is one of the most charming of a lovely class of plants; it has prettily-marked leaves and bright, deep, orange-coloured blossoms, which are freely produced; it does not grow more than 3 in. high. Galatella dracunculoides is a lovely Siberian Aster, between 2 ft. and 3 ft. high, extremely floriferous, and of good habit. The flowers are of a pleasing bluish-purple colour. Diplopappus rigidus, a United States perennial, is a charming plant of excellent habit, and with mauve-coloured blossoms; it grows about 1 ft. high. Helipterum floribundum, 3 ft. to 4 ft. high, has deep, orange-coloured flowers, and is an excellent autumn-flowering plant. Isotoma senecioides, about 6 in. high, is a beautiful annual with prettily-cut leaves and star-like, mauve-coloured flowers, borne singly on rather long flower stalks. Colchicum speciosum, from the Caucasus, figured in The Garden (Vol. XI., p. 548), is by far the most handsome of the genus, and apparently of as robust a constitution as our own indigenous Meadow Saffron (C. autumnale). Polygonum sacchalinense, a Siberian perennial, is a magnificent plant with large leaves borne on somewhat arching branches and short, dense, drooping panicles of greenish flowers. P. Sieboldi, from Japan, forms a very compact plant and grows to a height of 6 ft. or 8 ft.; the branchlets and leaf-stalks are red, and the panicles of white flowers are produced in such profusion from the axils of the leaves as to give the plant a most feathery appearance; this makes a fine object as a single specimen on a lawn. A variegated form of P. Sieboldi is not nearly so robust as the type, but the coloration of the foliage is very constant and extremely pretty; it only grows about 2 ft. high. P. cuspidatum compactum is a neat-growing dwarf form about as high as the last named; at present there are in flower few more lovely hardy plants.

Greenhouse Plants.—Thibaudia pulchra is one of the loveliest greenhouse shrubs we have seen for a long time; it has neat, leathery, glossy leaves, and large, drooping, wax-like tubular blossoms which are bright red, with the exception of the whitish mouth. Cotyledon ramosissimum, from the Cape of Good Hope, is a handsome, shrubby succulent with short, roundish, glaucous leaves and large, pendulous reddish flowers.

Stove Plants.—Ravena spectabilis is a showy member of the Rue family from Cuba; from the axils of its stalked leaves, made up of three leaflets, spring clusters of beautiful rose-coloured, salver-shaped flowers. Hymenocallis expansa has fine dark-green, glossy leaves and tall scapes bearing umbels of pure white flowers, the segments of which, as well as the corona, are very narrow.—†.

THE OLD YELLOW PROVENCE ROSE.

Permit me to thank "C. T." (p. 218) for his liberal offer to send me some plants of this grand old Rose next November, as well as some cuttings of a Rose stock that withstands drought. I need not add how pleased and grateful I shall be to receive both, and to defray expenses of transit, &c. I have also to thank others, and especially Mr. Gilbert, of Burghley, for his promise of buds or plants and useful hints on the best means of growing this beautiful old Rose. "C. T.'s" hints on budding are also very useful, though I have found, after trying such Roses as Maréchal Niel on all available stocks, and also double-budded, that it does best on its own roots. Possibly most Roses will get back to this natural state in the end. Meanwhile, however, a stock, such as that to which "C. T." refers, that will withstand the heat and drought of the northern and eastern counties of England better than the Brier would prove invaluable. The month's intense heat and drought that we had during the past summer killed about 500 Roses here; not that the plants died outright, but they have been dying ever since. Such losses are serious and most provoking. They have also become so common that for many years past we have been in the habit of budding 500 Briers annually merely to keep up our collection. Among so many fatalities, one almost envies "C. T." being able to write of Roses lasting for ever. In fairness to the Brier, however, it must be added that part of this alarming death rate must be laid to the constitution of the Rose; for while we have Coupe de Hèbè, Charles Lawson, Baronne Prèvost, and Madame Hardy on the Brier twenty-five years old, Beauty of Waltham, Duke of Edinburgh, and General Jacquimenot hardly live for five years. The mortality among Roses on the Brier and the Manetti seems a growing evil, and advances apparently in proportion to the improvement of the Rose in size, colour, and substance. A stock that would lessen or reduce the death rate would therefore prove a great boon to British cultivators. Seedling Briers will doubtless do something to mitigate this evil. The Manetti has also sensibly reduced the numbers of deaths in many localities, but there is a brilliant future for the Portuguese stock, referred to by "C. T.," if it will abolish it or render budded Roses as long-lived as those on their own roots. The latter, however, will doubtless become more and more the Rose of the future, though it will take considerable time to change the current of trade and the fashion in Roses to such a degree as to banish standards from our gardens. D. T. Fish.

The Japanese Rose.—This has been largely propagated by some Paris nurserymen; we noticed handsome standards and large bushes of it at the Exhibition. There is also what is supposed to be a double variety of it grown about Paris, but though this seems nearly allied to the single forms we grow, it does not seem exactly the same, having smaller and less beautiful foliage.

Blue Gum Tree in Fruit.—Mr. H. Fox (see p. 190), in his notice of the fine specimens of Eucalyptus globulus growing in the open air at Penmere, omits one interesting fact in connection with them, viz., that one of them at least perfected seeds last year, and that it is again bearing a crop this season. I have raised a batch of plants from its seeds given to me by Mr. Alfred L. Fox, of Penmere.—John D. Mitchell, *Falmouth.*

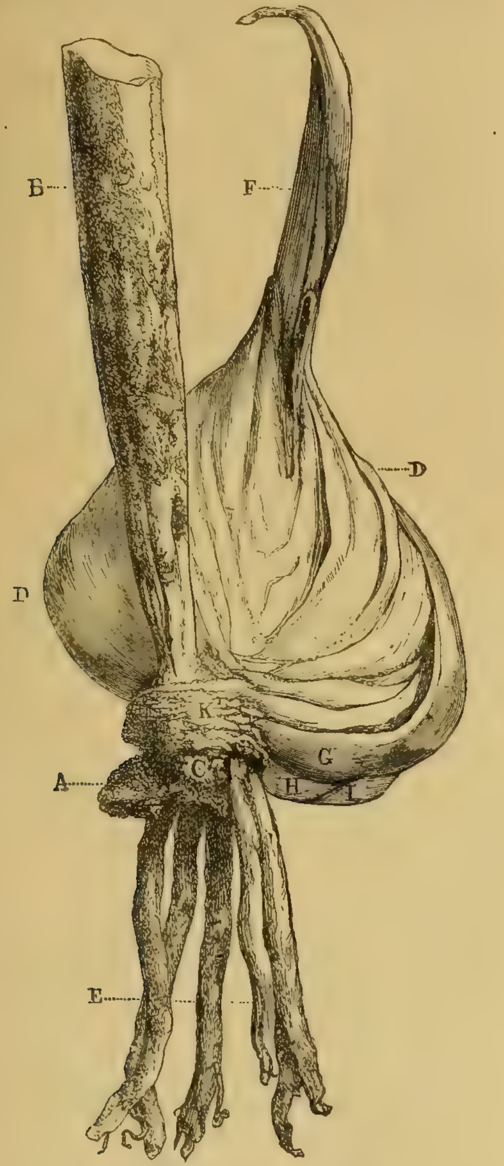
Myrtles on Walls.—The Myrtle is scarcely hardy enough to withstand our severest winters as an exposed bush, but on walls it does well in most parts of the kingdom, and is most effective. Its sweet-scented evergreen leaves are welcome at all seasons for mixing with cut flowers, and at this time of the year it will in most places be beautifully in blossom. Beyond firmly nailing the strongest shoots to the wall, no training is necessary, as it looks best growing freely with its spray-like growth loose and unfettered.—J. Groom.

Vigorous Rose Shoots.—I have a Gloire de Dijon, planted last year against my house on a north-east aspect, which this year has made a shoot 15 ft. 2 in. in length.—W. E. Layton, *Cranbourne, Windsor.*

THE FLOWER GARDEN.

FROM THE BIRTH TO THE DEATH OF THE LILY.

This paper was prepared to follow my last one (p. 140) as a supplement, but has been delayed in consequence of an accident having happened to the photographer. The subject to which I drew attention in my last was early lifting and replanting, and the decay and death of the parent bulb. The accompanying woodcut is taken from a photograph, sent by me, of a bulb of Lilium candidum, which was lifted out of the ground one month after it had bloomed in the present year, 1878. A shows the scar or site of the stem of 1877; B the old stem of 1878; C the remains of the roots of the old stem of 1878; D D the new bulb, having a large slice cut off it to lay open its interior formation; E the roots of the new bulb; these were from 5 in. to 7 in. long, with fine, fibrous rootlets, but they were unavoidably broken off in the lifting; F the radical leaves, peculiar to this Lily, being the precursors of the stem of the new bulb, which was destined to bloom in 1879. These leaves, springing up so early and so close to the remains of the old stem, now decaying, gave rise to the mistaken idea that this Lily is an evergreen. G, H, I are scales of the old bulb which were left in dissecting in order to show how the new bulb sits in the midst of them until they decay and wither off; K shows the remains of the scales of the old bulb which were picked off to uncover the new bulb. As to early lifting and replanting, that is to say, early after blooming, I would direct attention to the progress which this Lily has made in only one month from the time when the flowers of the parent bulb had faded. The new roots had penetrated from 5 in. to 7 in. into the soil, and, as seen in the woodcut, the radical leaves had grown 2½ in. above the apex of the new bulb. Even at this early period the roots were broken in lifting the bulb out of the ground. Yet it is laid down as a general rule by some Lily growers in their catalogues that "they (all Lilies) should be planted from October to March." In catalogues this Lily is classed with L. croceum, bulbiferum, testaceum, Thunbergianum, tigrinum, and some others as blooming in June and July; and, as regards growth, they may all be classed as represented in the woodcut, with the exception of the radical leaves, which are, as I have said, peculiar to L. candidum. If, therefore, all these Lilies cannot be lifted one month after blooming without injuriously damaging the roots, what state would they be in if allowed to grow three months longer? A mere beginner might be able to answer this question, plainly as I have put it. Therefore, the man who can recommend all kinds of Lilies, bloom when they may, not to be planted or transplanted before October, can know nothing correctly of their organic structure.



Old Lily Stem and Roots and New Bulb.

Let me now add one or two remarks on the annual decay and death of the plant. M. Max Leichtlin says: "If 'Dunedin' has a correspondent in California who can send him a bulb of L. Washingtonianum carefully taken out, he will observe that his theory cannot be applied to that species, for he will find inserted in one long sideway-growing bulb the accumulated growth of eight or ten years." Now, to me, there is nothing extraordinary in this, for the climate and soil of California are peculiarly favourable to the preservation of the phenomena alluded to. Compare the equable temperature of California with the land we live in. In this country we have the temperature of summer and winter differing by 50° or 60°, liable to great extremes, such as long and variable winters and short, uncertain summers. Yet with all these disadvantages I have found Lily bulbs in my underground explorations with an accumulated growth of four or five years upon them. As to the "sideward growth" of L. Washingtonianum, which seems to have struck M. Leichtlin as something remarkable, he will yet find, on close examination, that this is characteristic of all true Lilies. Let your readers look at the woodcut. We have at A, on our left, the scar or site of the stem of 1877; on our right side of it we have B, the stem of 1878; and at C, immediately under K, the remains of its roots. On the right side of B and C we have D, the new bulb, which was destined to bloom in 1879; and if the new bulb were further cut away, we would find, by microscopic observation, on the right, but close to the stem of the new bulb, the germ or seed-bud which was destined to grow up and bloom in 1880—all moving by a "sideward growth" to the right, one year after the other, as M. Leichtlin describes L. Washingtonianum. Here, then, before us in that woodcut we have an accumulation of three years' growth presented to our view at one glance, the germ or fourth being unseen by the naked eye. Now let the reader picture to his mind what I have seen in my underground explorations, namely, an extension to the left of two more scars like A, being the sites of the old stems of 1876 and 1875. This would make in all five years' distinct growths, besides the germ, all moving in a "sideward-growing" direction to our right. Before, however, the reader can realise this satisfactorily, let us examine the composition of that part of the plant which we see before us. The old stem B and the old scales G H I (the old roots being already gone) will shrink up and be entirely lost in our cold and damp soil before the spring comes round, leaving no traces behind but the site in the core of the old stem of 1878, as at A. Then, what becomes of the core itself? This is, in reality, the question in difference between M. Leichtlin and myself. I need not explain to the reader what the stem is composed of, as he can see for himself that during this short month it has been fast hastening to decay, especially near its base, where it is greatly shrunk up. With respect to the old scales, the walls of the cells in which the sap has been stored being composed of what is termed cellular tissue, resist for a time, but even these have to give way in a very few months to the all-powerful effects of decay, the commencement of which is easily recognised on the points of the scales. We now come to the core. In the new bulb the core has the appearance of a fleshy substance, but in the old bulb it resolves itself into a kind of woody fibre, and then it becomes almost fossilised, somewhat like the hardened rootstock of Zingiber officinale, or common Ginger. The scar A was left on the core in 1877, more than twelve months ago, but a double one I met with three weeks ago, in the presence of a friend, showed that the outer one must have been the scar of the stem of 1876 left there more than two years ago. If, then, in our own country we sometimes meet with four or five years' growth ranged sideways—and this is the invariable rule with all true Lilies, malformations excepted—is it anything to call forth wonder that, in a land so highly favoured as California, there should be found inserted in one long, sideward-growing bulb (successional bulbs) the accumulated (successional) growth of eight or ten years, like the rhizoma of Diphylleia cymosa, which often shows six years' growth and a new bud for the seventh, a scar being left, like that at A in the woodcut, by the decay of the annual stalk of the year before and the scars of previous years? Instead, therefore, of bringing forward proofs to show that my theory, as M. Leichtlin calls it, cannot be applied to L. Washingtonianum, he has placed before the readers of The Garden the very strongest evidence, when carefully considered, that can be urged to prove the correctness of my doctrine, viz., that in all true Lilies every year witnesses a birth and a death.

Dunedin.

LILIUM SPECIOSUM ROSEUM OUT-OF-DOORS.

About twenty years ago a Lily bulb was planted in my garden in November; the person who planted it had little knowledge of Lilies, and believed that they were all hardy. The bulb in question was left, therefore, in the open garden to the mercy of the weather, which that winter proved to be very severe. Early in the following May, having ceased to remember the planting of this bulb, I was puzzled with the appearance of a plant which had come up, and was showing foliage, which appeared to be strange to me. It was not long, however, before I saw that the plant was a Lily, and I then remembered the planting of it. Well, it grew most vigorously, and in due time—I think in the first week of September—the first bloom appeared, and when I saw it I was not a little surprised to find that my Lily was L. speciosum (lancifolium) roseum, which I had hitherto seen under glass only, coddled and petted as a tender plant, and not able to resist the rigours of a Scottish winter. After this my Lily received due attention, and the second bloom that is, the bloom of the following year, and the vigour of the plant, convinced me that this Lily was hardy, and one of the finest of plants for the out-door garden. From a single stem, my plant increased year by year till the stems numbered about thirty, but by this time they had begun to grow weaker, and the blooms were growing smaller. It occurred to me that the soil was exhausted, so I resolved on seeing what was at the root, and in making the shift I found deep in the soil quite a nest of bulbs; I forget the number, but there were more than a dozen. They were separated and planted in fresh soil, and now I have bulbs by the hundred, and blooms of the greatest beauty by the thousand. So far as my experience goes, L. auratum is equally hardy, and has the advantage of blooming earlier; I had it in bloom in July, but the bulb was planted out early in spring. My garden rests on a porous rock which affords perfect drainage and greatly helps to keep tender plants in the open air sound during winter.

R. C. R.

Bank House, Ayrshire.

Lilium eximium.—Last autumn I purchased a bulb of this Lily, potted it in a 6-in. pot, and treated it in all respects as my other Lilies. It produced one stem with two buds, only one of which came to maturity, blooming about the middle of July last. Scarcely had this bloom fallen, when I observed two strong shoots coming away on either side of the old stem. These have grown strongly since, and each now shows three buds enlarging rapidly, and, with a continuance of the present fine weather, they will no doubt bloom in about ten days. I have never had a similar thing happen with any of my other Lilies, and I should much like to know whether it is a peculiarity of L. eximium. Perhaps some of your readers can throw some light on this point. Since May, when I removed them from the frame, my Lilies have been outside my sitting-room window, which faces the south.—Fred. J. Alexander, *Fernlees, Gunnersbury.*

Cheap Lily Bulbs.—"Dunedin" wishes to know the fate of the one shilling Lily bulbs about which I wrote in the spring. Some, of course, have died; but a large majority, four out of five I should think, are doing admirably and flowering now with from five to sixteen flowers on a stem. They have been left out in the beds in which they were planted all the winter. I think this shows that cheap Lily bulbs may be relied upon if purchased from a respectable person.—J. Stewart Gathorne Hardy.

Transplanting Lilies.—"Dunedin" assumes (p. 216) that I had not seen Mrs. Newall's Lilies, but the fact is I did see them in growth as recently as last summer; he assumes, too, with about equal correctness, that Mrs. Newall's Lilies "are dwindling away for want of proper cultivation." I read Mrs. Newall's letter shortly thus: "A correspondent in The Garden insists on the necessity of frequent removal of Lilies. You know the position of our Lilies; I will describe their treatment and its results, and then, knowing that you have grown Lilies for many years, and have made them rather a speciality, if you advise removal I will move them." I think Lily growers of experience will agree with me, that when the results of Mrs. Newall's treatment are that Lilium speciosum album, in an exposed situation not far from the borders of Yorkshire, will, after sixteen years, grow and yield flowers, as described in Mrs. Newall's letter (p. 200), and have stems showing "robust health," that the only advice to be given was, "let well alone."—George F. Wilson, *Heatherbank, Weybridge Heath.*

SPECIES OF HYPERICUM.

I do not find the following beautiful kinds of St. John's-wort given in the list (Vol. XII., p. 280). They are all, without exception, highly ornamental plants, either for pot culture or for outside borders. They are all natives of South Europe, and are quite hardy in sheltered and rather dry situations. Though a century has elapsed since they were first introduced to cultivation, yet even now they are but seldom seen in gardens, and certainly not so often as they well deserve to be.

The Egyptian St. John's-wort (H. ægyptiacum) grows to about 1 ft. high, and is furnished with minute glaucous leaves, densely arranged in pairs on the numerous slender, glaucous branches. The blossoms are about ½ in. long, of a sulphur colour, and are borne in profusion from the axil of each leaf on the upper half of the branches. It forms neat and well-shaped specimens, and when seen in full flower, of which there is a continuous succession for a long time, it is one of the most striking of hardy plants.

The Balearic St. John's-wort (H. balearicum).—This beautiful kind is taller in growth than the preceding, sometimes attaining a height of 1½ ft. It is also more sparingly branched. The dark green, spoon-shaped leaves, about 1½ in. long, are arranged in alternating pairs, and are thickly covered on the under side and edges, and also the stem with wart-like excrescences, which give the plant a very peculiar appearance. The blossoms are borne singly at the tips of the branches, and are 1 in. across, of a deep yellow colour.

The Empetrum-leaved St. John's-wort (H. empetrifolium).—This very distinct kind forms a dwarf evergreen bush from 1 ft. to 1½ ft. high. Its branches are stiff and erect, on which are arranged in closely-set whorls of three the narrow, blunt-tipped leaves. The flowers, which are borne on terminal spikes, are from 3 in. to 6 in. in length, and are about ¾ in. across, and deep yellow in colour.

The Coris St. John's-wort (H. Coris).—This so closely resembles the last, that it is often confused with it. It is distinguished by not being shrubby, but having herbaceous procumbent branches, and moreover the leaves and stem are very glaucous. Altogether, it is a very distinct kind, but rare in collections.

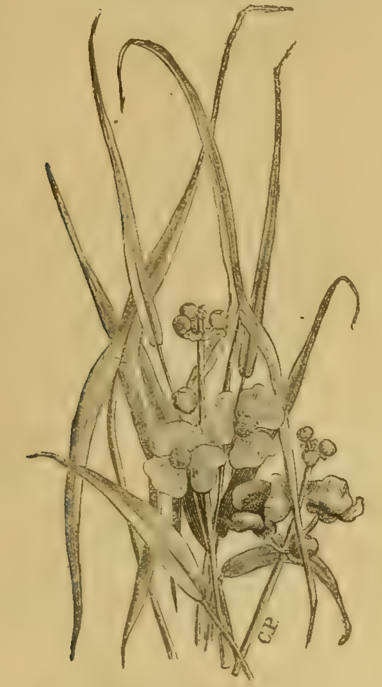
The Olympic St. John's-wort (H. olympicum).—This is one of the largest-flowered kinds in the genus, though the plant does not grow more than 1 ft. high. It is at once recognised by its very glaucous foliage and erect single stems, with terminal flowers about 2 in. across, and of a bright yellow colour. It forms handsome specimens that flower early in the season, and that last a long time in good condition, and its value as a choice border plant can scarcely be over-rated.

All the above kinds may be propagated easily by means of cuttings, which should be put in in the present month, as the shoots are now fully ripened, and will become well established before winter. In favourable seasons they also produce seeds abundantly, which afford a wholesale means of propagation.
W.

THE VARIABLE ARROWHEAD.

(SAGITTARIA VARIABILIS.)

This very elegant Arrowhead is a native of North America, where the genus Sagittaria is represented by a large number of widely different forms, which have puzzled botanists who have attempted to classify them. After Mosses and Ferns, aquatic plants have, perhaps, the widest area of distribution of any class of plants. Thus, Bullrushes are found nearly all over the world; and Arrowheads, though not so widely dispersed, are common in the temperate and sub-tropical regions of the Northern Hemisphere, and nearly throughout South America. Both in the Old World and in America there are numerous forms differing from each other in size, outline of leaf, and other particulars; and in a large series of dried specimens we find every gradation between plants 6 in. to 8 in. to 6 ft. to 8 ft. high. Many of the variations are, doubtless, due to the conditions under which the plant is growing—whether in running or stagnant water, in deep, rich mud, or shallow soil, or sub-terrestrial. On the other hand, there are variations in the foliage, &c., which appear to be wholly independent of external influences. It is noteworthy, too, that nearly the same range of variation is exhibited by the Old World S. sagittifolia and the North American S. variabilis. Some botanists, it is true, regard them as one species; but Dr. Engelmann, who has made a special study of the North American Arrowheads, says that variabilis differs from its Old World congener in not having a purple centre to the flower, in the relative length of the flower stalks, shape of carpels, &c. The most striking difference, then, is in the colour of the flowers; the varieties of S. variabilis having them pure white. The variety represented in the accompanying engraving is distinguished as S. variabilis var. angustifolia. Some of the leaves of young plants are long and narrow without any lobes at the base, and in the lobed ones the divergent lobes are nearly of the same form and size as the terminal portion of the leaf. The leaves are from 6 in. to 12 in. long, according to the vigour of the plant, and the flowering scape from 1 ft. to 3 ft. high. Messrs. Henderson, of the Pine-apple Nurseries, have introduced and are cultivating this variety. It is spread over the eastern side of North America, from Texas to Ohio, and further north. A variety called gracilis is a miniature of the foregoing, usually about 1 ft. high, with exceedingly narrow leaves on relatively long stalks. Another variety, named obtusa, has large, broad leaves, the broad lobes being sometimes as much as 6 in. wide, and the terminal part nearly double that width. Some years ago this variety was found wild, supposed to have been introduced in ditches near Bordeaux, where it grew to the height of 8 ft. This extreme height is probably ascribable to the extraordinary vigour displayed by some plants when first introduced into a fresh country with favourable climatal conditions; but even if this stature were not maintained, there is no doubt that this variety would be a very effective plant for the margin of a lake.
W. B. Hemsley.



Sagittaria variabilis.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Nymphæa odorata minor.—This is the variety named by Pursh as rosea, to which name it may justly lay claim, as the plant which we noticed in flower lately in the Kew collection confirmed. It is much smaller in every part than the type; it has the same dark purple colour on the under side of the leaf and attenuated lobes. The blossoms, which are about 2 in. across, have the outer petals deeply tinged with rose, a colour which contrasts finely with the fringe of golden stamens. Though much inferior to the recently-introduced rose-coloured variety of N. alba, it is, nevertheless, a distinct and valuable kind.—W.

Orchis latifolia.—Some weeks ago I made a rather invidious comparison between some flowers of Orchis foliosa, which I had seen in a nursery garden, and some of Orchis latifolia which I had seen growing wild. I stated that on particular occasions I believe I had seen well-furnished spikes of the latter 1 ft. long. I must admit that the statement was made somewhat loosely, and that I never measured them, but my impression remains the same. This year I dug up a number of roots to try what could be done with them under cultivation. Botanical synonyms are sometimes confusing, but I before said that my remarks referred to the common marsh Orchis figured in Sowerby's "British Botany" under the name of Orchis incarnata. As for Miss Hope's plan of nipping off the flower-head when withering, I can only remark that O. latifolia grows abundantly near Eton in a meadow which is mown every year when they are either in flower or just over, and the bulbs do not seem to suffer from it.—C. W. Dod, *Eton.*

Salvia patens in Mixed Beds.—Amongst blue-flowered ordinary garden plants few equal this beautiful Sage. Being quite hardy and of a perennial character, it will, when once planted, continue to produce yearly its beautiful spikes of lovely blue, even after Delphiniums and similar plants in mixed borders are nearly over. Perhaps the best effects, however, of which it is capable are obtained in mixed beds, as, for instance, when the spikes of this plant are allowed to mix freely with those of Calceolaria amplexicaulis or with golden-leaved Pelargoniums or Abutilons, the whole being edged with Coleus. The roots, like those of Dahlias, are quite safe in winter left in the ground under a covering of coal ashes. If lifted they should not be exposed to a dry atmosphere for any length of time, as being only of moderate size they are not capable of withstanding so much exposure as Dahlias. It is difficult to get any quantity of soft shoots fit for propagating in autumn, as nearly every shoot made runs to flower. Therefore, the principal effort to increase the stock of this plant, which is never very abundant, should be made early in spring. If the roots be packed in boxes of light soil and introduced to gentle heat in March, abundance of young shoots will be produced in April, which, if struck in the ordinary manner, like Dahlia cuttings, make good plants for placing out-of-doors in May, and when once a good supply of roots is obtained, it is an easy matter to make good any deficiencies in beds or borders that may occur. The combinations in which this plant may be successfully employed are unlimited, and may be varied according to taste.—J. G.

Helianthus multiflorus fl.-pl.—This fine double perennial Sunflower is very effective when planted in large masses along with Dahlias, Hollyhocks, Tritomas, or other tall flowering plants. It looks extremely well, too, in shrubbery borders or in mixed beds in which bold and striking colours are desired.—J. Groom.

TREES AND SHRUBS.

THE KENTUCKY COFFEE TREE.

Loudon, in his "Arboretum Britannicum," gives a list of the trees and shrubs introduced into Britain at various periods during the last century, and in the list of those brought to us between 1741 and 1750 we find the Kentucky Coffee tree (Gymnocladus canadensis), said to have been introduced by the Duke of Argyle. Almost a century ago we find it figured by Michaux in his beautiful work, "The North American Sylva" (Vol. I, p. 122), and although subsequent authors have described it, their descriptions have all been a copy of those of Michaux. I had supposed, after so long a period, that it was a tolerably common tree in England, though Mr. Sargent, who visited the leading places a few years ago, says he does not remember seeing it; and I do not now, after so long a time, recollect seeing many specimens at the time of my visit many years before. There are, however, some fine specimens of it around London and on the Continent. Loudon enumerates several; one at Whitton was 60 ft. high in 1835. In the Mile-end Nursery was one 35 ft., and in the Jardin des Plantes, in Paris, another equally high. Though growing over such a vast extent in our own country, from Canada to Tennessee, it is yet very rare to find it planted in the Atlantic States; and it is doubtful if there are trees of any size, except in some of the old half-botanic gardens. It is so unlike almost every other hardy tree, and so tropical in aspect, that it is difficult to convey a good idea of it, except by some comparison. Imagine, therefore, a tree 50 ft. high, with the graceful foliage of Acacia lophantha, but ten times as large, and of the soft glaucous hue of A. dealbata, and you have a slight knowledge of this Coffee tree in summer. In winter, however, this is all reversed; the immense double-compound leaves, 3 ft. long, have fallen; and dangling at the very tips of a few large, very rough, blunt, awkward, irregular branches, are the huge reddish-brown legumes or pods, 6 in. to 10 in. long and 2 in. wide, slightly crescent-shaped, filled with a kind of pulpy juice, and containing from seven to ten large bean-like seeds. At that season, compared with other trees, it appears to be only the remains of some old and decrepit tree which storms had stripped of its spray, appearing exactly what its Canadian name (Chicot) implies—a stump tree; yet there is a rare kind of beauty even at that season, for its very barrenness arrests the eye and singles it out as a curiosity among tree vegetation. Loudon, as usual, gives a drawing of a tree ten years planted, but it is then too small to show its characteristics. He also gives another drawing of the old tree at Syon, 54 ft. high, and this again from position or injury by winds does not pourtray its fine, erect, feathery head. It is not until it has somewhat lengthened out its few branches that it develops the masses of tufted foliage, almost like bouquets of Fern leaves, which give it such rare beauty. Its growth, which is very slow, appears to be about 1 ft. a year. The several trees of it which Loudon names as 35 ft. to 45 ft. high, had been planted thirty to forty years. Our own tree is about 35 ft. high, and has been planted thirty or more years. Last autumn, in walking under the tree after the leaves had fallen, I picked up two or three of the large pods which had been blown off. It was the first time I had ever noticed it in fruit. Looking up at the tree, I saw a large number of the pods, but having no means of reaching them, except by climbing, I thought another day would do to gather them. The few seeds picked up were planted in a pot in the greenhouse, but I forgot all about gathering the others until one day I noticed the seed had begun to grow. This, however, was the latter part of March; it at once reminded me of my intent to gather the remainder in the autumn. The snow had just disappeared, and, upon examination, we found the pods all upon the ground and the seeds already swollen and nearly ready to vegetate. We had them immediately planted in the house, and in a few days they began to push up the earth just in the same way as Scarlet Runners, pushing themselves quite out of the soil, and in a few weeks they were as large as those planted in November. Michaux says that the male and female flowers are borne by different plants, and Mr. Sargent asserts that "both sexes of this tree should be grown near each other" to produce seeds. It would appear great presumption in me to doubt this, yet I wish to state that I have but one single tree of the Gymnocladus, and I know of no other tree within two miles, and am not sure there is one within ten or twenty miles, yet I had plenty of fertile seeds, from which I now have fifty or a hundred plants 4 in. or 5 in. high. If diœcious, how is this to be explained? I have never noticed the flowers, but eminent botanists have, I presume; and, if strictly diœcious, how could I have fertile seeds? Thirty years ago I described this tree in the "Magazine of Horticulture," and, with the increasing growth of the tree since that time, my appreciation of it has in no way lessened; on the contrary, as I look at it now there are few, if any, of all our hardy American trees, not even excepting the Magnolia or Tulip tree, which have the unique, semi-tropical, and light, feathery aspect in summer, or the sombre and weird, yet singularly attractive, appearance in winter that this Coffee tree possesses. C. M. Hovey.

Boston, Mass.

NOTES ON CONIFERS.

Sciadopytis verticillata.—This, the Umbrella Pine, is a singular species. It is said to be the finest Conifer in Japan, growing to a height of 150 ft. It is well worthy of trial in this country, for although it appears to be of slow growth here, it has been with us too short a time to enable a fair judgment to be formed of its merits.

Sequoia sempervirens (the Californian Redwood) is a giant of scarcely inferior size to the Wellingtonia. Although of doubtful repute in the North for hardiness, I have seen it growing luxuriantly in very cold districts. It is a far more beautiful tree than the Wellingtonia, both from its graceful foliage and habit, and the deep ruddy colour of the trunk. It requires the same conditions of soil and shelter, but should be planted, if possible, in a north aspect, where it is less likely to be tempted into late autumn growth. It is frequently known in nurseries as Taxodium sempervirens.

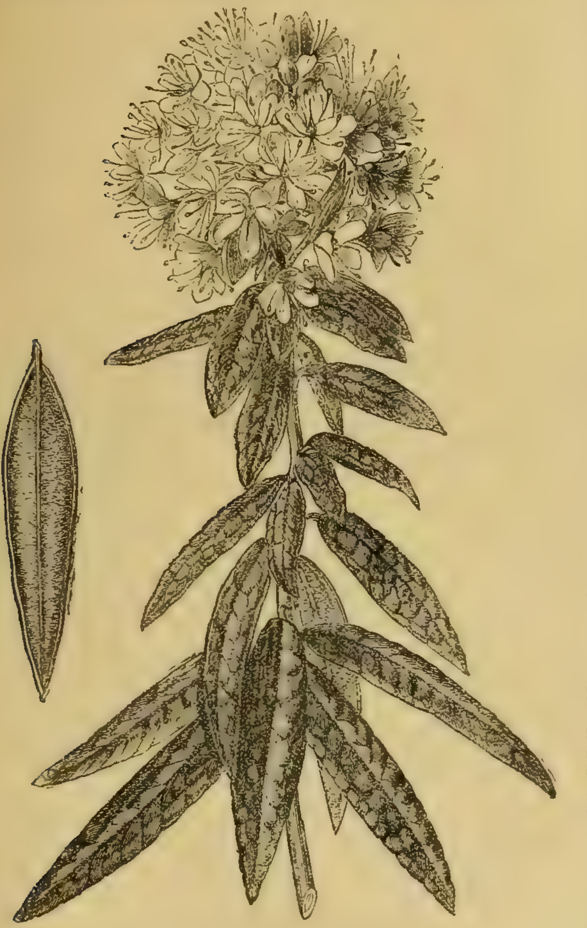
Taxodium distichum (the Deciduous Cypress) is a very beautiful tree, of a bright and peculiar green in summer, which changes in autumn into gorgeous gold and brown. It should only be planted in sheltered, swampy places, near lakes and rivers if possible, where it forms a beautiful object.

Thuja gigantea (known also as T. Lobbi or Menziesi) has been in this country about twenty years, and already promises to become of great importance as a forest tree. The annual growth is very vigorous, the habit of the tree drooping and graceful, and the olive-green foliage is healthy-looking and plentiful. The timber is said to be valuable, hence this tree may be safely used both as an ornamental and forest tree. It stands moderate exposure, and is not at all particular as to soil.

Cryptómeria japonica.—A rapidly-growing hardy tree, but one that will not bear exposure to high winds. It is very ornamental, the foliage being of a rich green, and somewhat Fern-like or Moss-like in character. Although planted in quantities in the Azore Islands and elsewhere for light packing-case timber, it is not likely to be sought after in this country as a timber tree. The wood is very light and soft. It likes a somewhat damp soil. Of the other species, C. elegans, I cannot speak except in the character of a shrub. It is a very beautiful plant, and should it grow to the dimensions of a forest tree in this country, will be a very striking object in the landscape, from the coppery tint assumed by the foliage in winter. In its native country, Japan, it grows to the same size as C. japonica. Salmoniceps.

THE LABRADOR TEA PLANT.

There are several plants that are rarely to be found, except in the damp cold peat swamps and dark moist woods of our Northern States. Comparatively few have seen this aspect of vegetation, where the Sphagnum or peat Moss covers the surface for acres, the upper portion of the Moss being alive and growing, while the lower portion is decaying, and undergoing a gradual change into peat. In this wet mass a number of plants find a congenial home, one of which is the Labrador Tea (Ledum latifolium), a shrub which sometimes reaches 5 ft., but is commonly not more than 2 ft. high. It belongs to the Heath family. Its alternate evergreen leaves are of a pale, dull green; as looked at from above they present no remarkable appearance, but the under surface shows a singular contrast; in the first place, the edge is neatly turned over all round, revolute, as the botanists call it, though a lady might compare it to a hem, and the whole lower side is covered with a thick brownish or rust-coloured coating of down or wool, reminding one of a piece of felt; we do not think of any other native plant that presents in its leaf such strong contrast of colour and texture; the new growth of the stem has a similar down, which soon disappears. The flowers appear in May and June in umbel-like clusters at the ends of the branches, and proceed from large scaly buds, which are formed the previous season. The annexed engraving shows the end of a flowering branch of the natural size. The corolla consists of five white petals, and the stamens, usually of the same number, but sometimes six or seven; the fruit is a dry oblong pod. The plant, though not so showy as some of its relatives, is an exceedingly neat and interesting one. Like the Rhododendron and similar plants, this would no doubt reach the greatest perfection in a specially prepared peat soil, but we have on two occasions removed the plant from its native locality to a very sandy garden soil, with very satisfactory results. In European nurseries this plant is raised from seeds and by layering. A much narrower leaved species, L. palustre, is found far north in British America. The English name refers to the use made of its leaves (which are slightly fragrant when bruised) by the people of Labrador as a substitute for Tea.—"American Agriculturist."



Labrador Tea Plant (Ledum latifolium).

Chestnut Sports.—Mr. Joseph Newton has shown us a singular sport taken from a Sweet Chestnut growing in Kensington Gardens. The normal size of a leaf taken from the same tree is about 8 in. long and 3 in. wide, while that of the sport is from 14 in. to 15 in. in length, and little more than ½ in. in width.

THE FRUIT GARDEN.

PROTECTING EARLY VINE BORDERS.

The time is close at hand when the protection of early Vine borders will require attention. In the early forcing of either fruits, flowers, or vegetables, forethought forms the principal part; for unless attention has been paid during the summer months to keep the roots and foliage in a healthy condition, so as to well ripen the wood and produce fine plump buds, no amount of labour afterwards will insure success. This remark holds good also in the case of early Vines, the foliage of which must be kept clean and free from insects, and the wood well ripened. Different opinions are held respecting the protection of Vine borders with leaves or litter. Some say that this covering will ferment and heat, but this never happened in my case. I have placed trial sticks in every position, and I could never find any difference between these in the litter and those in the border; but whether leaves or litter are used, both should be in a dry condition. Previous to 1862 I adopted the old system of using fermenting material on my early Vine borders outside, and added a little fresh material about every three weeks, according to circumstances. This necessitated extra work, which I thought returned but little profit, so I discontinued the practice. We commenced cutting Grapes the first week in May, and for five successive years I only protected with from 9 in. to 12 in. of leaves and litter, covered with wooden shutters to throw off the rain; and the Vines continued to produce good crops quite as early as before, and retained their foliage longer, which is always beneficial in early Vines. I now force much earlier, and commence cutting the third week in March; but all our early Vineries have the better half of their borders inside, which is, in my opinion, the most suitable plan in the case of Vines that are forced early, the greater part of the roots being comfortably inside, where they can receive a regular supply of weak manure water at a temperature of 80°; and by the time the leaves begin to unfold the roots inside are ready for action, while those in the outside border remain quiet till the fruit arrives at the stoning period, and move just at the time when they are wanted to finish off the crop. In this way, too, the foliage is kept on the Vines much longer than if the roots were all inside, as roots inside get sooner exhausted than those outside, and in very early forcing year after year, every care is required to keep the foliage clean and healthy as long as possible, for if neglected, every eye on the Vine will break from top to bottom during the month of August, and will ruin the crop for the following season. The protecting material should be put on the borders as early in October as possible, so as to inclose, as it were, the summer heat. If rain should now set in, place the shutters on the border to prevent saturation, as the roots soon perish when wet and dormant.

Waterdale. J. Smith.

MANAGEMENT OF SHY-SETTING GRAPES.

In the cultivation of plants or fruits, the plodding enthusiast devotes his attention to what are termed "difficult subjects," and prides himself on his success in moulding them to his will. For some years I have been engaged in the cultivation of the different kinds of fruit usually found in an English garden. In this department it is quite unnecessary for me to say that Grapes of various kinds always occupy the first place in the front rank, and, judging from the magnificent examples of cultivation we frequently see at exhibitions, as well as in private gardens, the horticulturist's sheet-anchor is well worthy of that place. As a cultivator and observer, I have always been curious to ascertain the causes and conditions which have led to extraordinary success, and I have also paid some attention to the causes of failure in the management of difficult subjects. Many of our finest sorts of Grapes, both black and white, being shy-setters, we do not, as a rule, see them so well grown as they ought to be. Either the bunches are thin and straggling, with here and there a properly-fertilised berry, or, as is often the case with that grand old Grape, Black Morocco, better known as Kempsey Alicante, we see fine, vigorous Vines a complete failure through imperfect fertilisation. A short time ago I walked through an extensive range of span-roofed Vineries. The Vines, on the extension principle, were growing with a luxurious, fruitful-looking kind of vigour, by no means objectionable to the man who knows how to handle the reins; but what was the state of affairs? Hamburghs, Lady Downes, and Muscats had set badly, and a splendid Kempsey Alicante, capable of carrying a quarter of a ton of Grapes, was running rampant for the want of something to do. I was told it carried a heavy crop last year, and required rest. We often hear of the slip between the cup and the lip. To me, the most annoying slip would be the loss of the crop, after having succeeded in bringing finely-formed bunches up to the flowering period.

If we turn to a good weekly calendar, we find instructions to keep the house dry, warm, and well ventilated while the Vines are in flower. Many people follow this advice, and fail; so to make sure of our point, we will go back to the beginning, *i.e.*, the border. On all soils for Vines on the single rod, the bottom should be concreted and well drained with clean broken bricks or stones. The border should be made piecemeal, and underdone rather than overdone with soil, an abundance of live active roots within a limited space being more easily excited when the Grapes are coming into flower, and being capable of taking a great deal more tepid liquid when swelling-off the fruit, than if spread over a larger area. In all cases where practicable, I give my Vines the benefit of inside borders, if only 3 ft. wide, as I can then lift and relay the external or internal roots alternately, for the purpose of keeping up lively root action, without losing a crop.

Assuming that we are about to start, in January, a house that has been well planted with Muscats and Alicantes, with room for extending the inside and outside borders as the roots advance, instead of filling up the border with a mass of compost, I should prefer circumscribing the roots by means of turf walls, some feet within the space set aside for the border. The trench thus formed I should fill with fermenting Oak leaves as soon as the Vines had broken. In the course of three weeks these leaves would be cast on the top of the border, covered with shutters, and the trench having been refilled, root-action would be secured for the season. Meantime, the inside trench would be filled with a mixture of horse manure and leaves, and the surface of the border, slightly mulched, would receive moderate supplies of water, at a temperature of 90° to 95°. Under this treatment, growth being free and quick, fine shows might be expected at from two to four buds on every shoot.

So far the Vines have not been distressed, the warmth applied to the roots having assisted them before the stored-up sap became exhausted. The great point now to be considered is a good set. To ensure this, we usually see every bunch left to exhaust the Vines by the flowering process, at a time when they require all the assistance that can be given; the result is a number of imperfectly fertilised bunches, from which, with a great deal of trouble and anxiety, 25 per cent. of the best are saved for the crop, and the others are cut off and thrown away as useless. After a narrow escape of this kind, the selected bunches will contain many stoneless berries, which obstinately refuse to fill up the space they ought to fill. The result is ragged bunches, through which a rifle ball might be fired without touching them; and light cropping being almost as fatal as heavy cropping, the Vines lose their balance, the wood becomes gross, ripens badly, and the second year is worse than the first. Now, had the 75 per cent. of bunches removed been cut off before they approached the flowering period, those left would have set like Hamburghs, probably without artificial fertilisation, certainly with the aid of the camel-hair pencil passed over every flower once a day. Muscats contain plenty of pollen, and some Grape growers draw the hand down the bunches; but it is not a good practice, as many of the outside berries show a small brown spot at the apex when ripe, caused no doubt by pressure or perspiration. Kempsey Alicante, even after the surplus bunches have been removed, requires a little more care than the Muscat, and well this noble Grape repays all that can be done for it. Having often noticed that Grapes invariably set well when the points of the bunches are drawn up by accident or otherwise to the glass, I pay great attention to the position of these when in flower, the more so as the Alicante often produces a moist, adhesive kind of matter, which prevents natural fertilisation; but by the daily use of the pencil, well furnished with Hamburgh or Muscat pollen, which is carried on a sheet of paper, this matter soon gives way, and the Alicante then sets as freely as any other Grape. Artificial fertilisation to some may appear a very tedious process, but having cleared the Vines of the bulk of the surplus bunches, the operation is quickly performed; indeed, half an hour each day while the Grapes are in flower will ensure a large house of well-set Grapes. Of the varieties in general cultivation that require artificial fertilisation I may name the Muscats, some of the Sweetwaters, Mrs. Pince's Muscat, Black Morocco, Venn's Seedling, and Muscat Hamburgh. The Frontignans, Lady Downes, and the Hamburgh, on imperfectly ripened wood of the past year, will also repay the care bestowed upon them.

From the foregoing remarks, your readers will gather that many years' practical experience has taught me that moderate-sized borders, well filled with active roots, bottom-heat in proportion to that of the house in which the Vines are growing, combined with the early removal of surplus bunches, and the artificial fertilisation of those intended for the crop, will lead to success in the most difficult subjects; while treatment the reverse of this is attended with but partial success or failure. I have not made any allusion to the ripening of the Vines, as amateurs, to whom these remarks are addressed, know that good Grapes cannot be obtained from imperfectly matured wood.—W. Coleman, in the "Florist."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Victoria Plum.—This Plum has been so laden this year with fruit as in some cases to be literally borne to the ground with its weight, unless supported by props. The Victoria is not a first-class dessert Plum, but selected, well-ripened fruit are very good-eating nevertheless, and, being a freestone sort, it is all the pleasanter. As a culinary Plum it stands high, and it makes a delicious preserve. I have purchased here a fine sample at 7s. per bushel, the selling market price. A strike costing 2s. 6d. gave, when stoned, 15 lb. of good flesh for boiling, which was just 2d. per lb. The "Fruit Manual" classes this Plum as ripe in the beginning and middle of September. Here the bulk of the fruit is ripe and marketed at this date, August 31. I may add that a strike is about 3 gallons or one-third of a bushel. It is a common fruit measure in the London market.—A. D., *Bedfont*.

Treble-rooted Vines.—An interesting experiment in Vine culture may now be seen at Heckfield. Those who have visited these charming gardens are familiar with the large span-roofed Lady Downes house, the pitch of which on either side touches the ground. On the one side are planted twelve Vines, eleven of which have two rods each, and these are carried up on the one side and down to the bottom of the other, a distance of about 30 ft. Last year Mr. Wildsmith layered the shoots at the extremity of these twenty-three rods, and all rooted. The wood beyond was taken off in the winter, and now may be seen the interesting spectacle of Vines having three distinct sets of roots. What the ultimate effect upon the plants may be it would be difficult to say, but at present the crop is at once the best and heaviest which the Vines have borne. The bunches are fine, and the berries large and getting as black as Sloes. There are upwards of 400 bunches in the house, presenting a probable weight of about 600 lb. This is a heavy crop for such a kind as Lady Downes, which is the very best late-keeping Grape, the larger portion of the produce there being cut in January and kept good in bottles until April and May.—A. D.

In the Orchard.—In these modern days men have lost the pleasures of the orchard; yet an old-fashioned orchard is the most delicious of places wherein to idle away the afternoon of a hazy autumn day, when the sun seems to shine with a soft slumberous warmth without glare, as if the rays came through an aerial spider's web spun across the sky, letting all the beauty but not the heat slip through its invisible meshes. There is a shadowy coolness in the recesses under the trees. On the Damson trunks are yellowish crystalline knobs of gum which have exuded from the bark. Now and then a leaf rustles to the ground, and at longer intervals an Apple falls with a decided thump. It is silent save for the gentle twittering of the swallows on the topmost branches—they are talking of their coming journey—and perhaps occasionally the distant echo of a shot where the lead has gone whistling among a covey. It is a place to dream in, bringing with you a chair to sit on—for it will be freer from insects than the garden seats—and a book. Put away all thought of time: often in striving to get the most value from our time it slips from us as the reality did from the dog that greedily grasped at the shadow: simply dream of what you will, with Apples and Plums, Nuts and Filberts within reach. Dusky Blenheim Oranges, with a gleam of gold under the rind; a warmer tint of yellow on the Pippins. Here streaks of red, here a tawny hue. Yonder a load of great Russets; near by heavy Pears bending the strong branches; round black Damsons; luscious egg Plums hanging their yellow ovals overhead; Bullace, not yet ripe, but presently sweetly piquant. On the Walnut trees bunches of round green balls—note those that show a dark spot or streak, and gently tap them with the tip of the tall slender pole placed there for the purpose. Down they come glancing from bough to bough, and, striking the hard turf, the thick green rind splits asunder, and the Walnut itself rebounds upward. Those who buy Walnuts have no idea of the fine taste of the fruit thus gathered direct from the tree. Surely it is an error to banish old-fashioned orchards from the pleasure-grounds of modern houses?—"Pall Mall Gazette."

Blackberries.—These are most abundant this year. I have lately observed amongst them several distinct varieties, that vary considerably, both in leaf, fruit, and time of ripening. Blackberries, I need scarcely remark, are extremely well adapted for tarts or preserves, as although by themselves they are somewhat insipid in taste, that may be readily improved by the addition of a sharp Apple or two or a little Lemon juice.—J. Groom.

THE INDOOR GARDEN.

CONFINING THE ROOTS OF STEPHANOTIS.

Although specimen plants of Stephanotis are not uncommon, yet it is much more generally grown wholly for the sake of its flowers in a cut state, their pearly whiteness and delightful fragrance rendering them favourites for nearly all kinds of indoor decoration. When its blossoms are required in quantity the best plan is to plant it out in brick compartments or narrow borders, and to train the shoots tolerably close to the glass, for unless a maximum amount of light and air be given it, it will not flower freely. The most floriferous plant of Stephanotis which I ever had was planted in a narrow border, not more than 1½ ft. wide, in a compost of fibry turf, peat, and sand, resting on a quantity of brick rubbish, which acted as drainage. Here it had abundance of water, both at the root and overhead. It is very liable to be attacked by mealy bug, but copious deluges of tepid water will dislodge it. The shoots were trained horizontally on wires 8 in. apart, and the same distance from the glass of a span-roofed pit, where they could receive abundance of heat, light, and air, but where they were at the same time carefully shaded from the direct rays of the sun, while the foliage was in an immature condition during the early summer months, and while the principal flowering season lasted. During the autumn months they received all the light and air possible, with but an intermediate temperature, and, during the winter months, the temperature was seldom more than 50° at night and sometimes even lower than that, but as sun-heat increased with the lengthening days in early spring, and more fire-heat was applied for forcing purposes, the flower bunches appeared at the axil of every leaf, so that by the time they began to expand, each wire looked like a bridal wreath, densely furnished with waxy flowers of great substance. While in that condition it was copiously supplied with weak liquid manure to help the crop of bloom and to promote some early growth, that usually flowered well later in the summer. As this plant was confined to the portion of roof over the central pathway, it occupied space that could not well be otherwise utilised; but if trained thinly over an entire house or pit, the majority of plants, such as Ferns, that delight in partial shade might be grown under it with advantage. Where a narrow border is not available, brick compartments would be preferable to planting it in a large body of soil, more especially where it happens to be associated with stronger-growing plants. Thus treated, the roots are more under command as regards the applying of moisture, and when any lack of vigour is observed, the old soil can be carefully removed from the surface and replaced with fresh, well-enriched compost; any pruning required should be done after the flowering is over. It should consist in cutting any old, bare pieces away in order to give light and air to the new growth; overcrowding, above all things, must be avoided. Plants grown on circular wire trellises frequently fail to flower freely, owing to the young wood being trained so thickly as to be unable to get ripened. In that case it should be trained up thinly on wires until thoroughly matured, and then be replaced on the trellis, when it will be almost certain to produce an abundant crop of flowers.

J. G.

WINTERING HALF-HARDY PLANTS IN FRAMES.

Although the system of heating houses and pits with hot water has greatly simplified the keeping of tender plants through the winter, and, to a great extent, superseded cold frames and pits for that purpose, yet it frequently happens that small cultivators have no heated structure of any kind, and, therefore, necessarily fall back on the somewhat antiquated, but by no means to be despised, two or three-light frame, that, during summer, is usually devoted to Cucumbers or Melons. I have seen a good many plants safely wintered as follows: As early as cuttings are procurable, say in the end of July, commence propagating Pelargoniums. Get some boxes 4 in. deep, and of lengths most convenient for storing purposes, and fill them with tolerably fine, sandy soil; in this insert the cuttings, prepared in the usual manner, about 2 in. apart. These will root freely in a fully exposed position if moderately supplied with moisture, and they will be well established in the boxes before winter sets in. During August such tender, soft-wooded cuttings as those of Lobelia, Alyssum, Verbena, &c., may be readily propagated in store pots under hand-glasses or cloches set in a tolerably shaded position, giving a little air at night, picking off any decayed leaves, and giving water sufficient to keep them from flagging. The pots should be well drained; at least, they should be one-third full of potsherds, over which should be put a covering of rough soil, finishing with finely-sifted soil and clear, sharp sand. As soon as they commence to grow, which will be in about three weeks from the date of insertion, give more air, and after another week remove them to an open situation, but sheltered from rough winds. The growing points and all flower buds must be kept pinched close, in order to induce a dwarf, sturdy habit. About the end of September, or early in October, set the frames on a good, hard foundation of well-trodden coal ashes that will keep worms down, and superabundant moisture from rising. A sheltered position fully exposed to sun and air is best, as at all seasons, when there is not actual frost, plenty of ventilation should be given, as stagnant damp is more frequently fatal than frost. The latter, however, must be guarded against by means of dry litter put over the glass, and the sides may be securely protected by dry leaves packed firmly about 1½ ft. thick all round. If the boxes and pots be elevated on a hollow stage all the better, and only sufficient water to prevent flagging should be given until the days begin to lengthen. Then any which it may be desirable to increase may be removed to closer quarters to promote young growth for cuttings, as where means for propagating are at hand, spring-struck plants from those kept in store pots, such as Verbenas and Lobelias, are the best. Pelargoniums, however, are best struck in the autumn. Where space will allow, these should be potted off early in spring, and as soon as they have become well established under glass, they may be hardened off under some temporary protection. If intended to remain in the boxes until they are planted out, strong-growing varieties must be allowed more space.

About the middle of March a hotbed should be made up for a one-light frame, and as soon as the heat has fallen to a safe temperature all the cuttings fit for use should be taken off and inserted moderately thick, and the pots in which they are put should be plunged to their rims in spent tan or Cocoa-nut fibre, keeping them pretty close up to the glass. The cuttings should receive a good watering through a fine rose when first put in, and they must not be allowed to become dry enough to flag at any stage of their growth. If the lights be kept close and shaded from bright sunshine during the day, a batch of cuttings may be struck off rapidly and successfully. In fact, where convenience for hardening off the plants as soon as struck exist the numbers that may be propagated under a single light, by renewing the bed and adding linings for successive batches, would not be credited by those who have not tried it. For ordinary growers one or two batches of cuttings will be sufficient, and by raising some Cucumber plants with the earliest lot they will be ready for planting out as soon as the propagating is over. Pans or boxes of annuals available for bedding may also be raised during the earlier stages of growth, or before all the space is required. Petunias, Golden Feather, Lobelias, Asters, Perillas, and similar plants, if sown thinly in boxes and just given a start under glass, may be afterwards sheltered by temporary coverings during any ungenial periods that occur before they are planted out.

There are in addition to the above many very useful plants that are hardy enough to stand a moderate amount of frost without any protection, and for which a turf pit, with a temporary covering of reed-mats during severe weather, is all that is needed. Calceolarias, Gazanias, Santolinas, Violas, Golden Thyme, and similar plants now so extensively used, are better kept during winter in the hardiest condition possible, as nothing predisposes plants of a hardy character to disease so much as unnecessary coddling during winter in a higher temperature than that which they require, thus necessarily keeping them growing when they ought to be at rest.

J. Groom.

Aspidistra lurida variegata.—This is one of the best plants that can be grown either indoors or in the conservatory, being of easy culture and rapid growth, and making fine, healthy foliage, which, when well matured, will continue in good health in ordinary dwelling-rooms for a lengthened period; being of a smooth, shining character, too, it is readily divested of dust by sponging or syringing. This Aspidistra will withstand a wide range of temperature, varying from that of the hot stove to that of the coolest greenhouse, but it retains its foliage best in an intermediate house.—J. Groom.

CONTINUOUS FLOWERING OF BOUGAINVILLEA GLABRA.

Among climbers, the blooms of which adorn the roofs and walls of our plant houses, there is none more beautiful than this Bougainvillea, owing to the large size and profusion of its mauve or rather pink bracts. Bougainvilleas inhabit the warm, semi-tropical valleys lying along the upper tributaries of the Platte River, the banks of which are clothed with an infinite variety of tropical productions. Skirting the forest, the Bougainvillea may be seen growing rampant among the branches of some tree, which it festoons in a gay but artless manner, not without injury, however, to a sapling. This luxuriance, which lasts in greater or less abundance about nine months, is promoted by copious rains, clear sunshine, atmospheric influences, and decayed vegetation, but with winter comes a check; sometimes the leaves fall entirely, but in ordinary seasons they are partially retained and the dormant state quickly passes into one of active growth. These conditions indicate that we should grow the Bougainvillea in a brisk-growing temperature, on the one hand, followed by a decided rest on the other—treatment which experience verifies, judging from the behaviour of Bougainvillea glabra during a series of years. It is grown here in a 20-in. pot or tub, placed on a stone table 2 ft. above the pipes, at the warm end of an intermediate house, the thermometer often falling to 45° in midwinter. It is at present one mass of bloom. The entire plant covers an area of 100 sq. ft. With the departure of bright sunlight and the approach of winter, growth reaches a minimum. In January the ripened shoots are pruned to short spurs; after a few weeks more the roots are examined, some new soil supplied, and the stem tied up horizontally near the glass. During the resting period water is not entirely withheld, because I consider the "dry-as-dust" practice injurious to the roots; the atmosphere is also somewhat moist. In March the buds break with renewed energy, root action follows, the vigorous nature of the plant becomes apparent, a fact which appears to me to form the basis on which success or failure, as regards continuous flowering mainly depends, for if the advancing shoots be not first thinned and afterwards pinched at every lateral, the annual result is an exuberance of immature growths with very little bloom. But let the shoots be kept evenly apart and trained carefully to the wires, as one would do with a Peach tree on the frame method, and the sun will not fail in perfecting the growth, in strengthening the whole plant, and indicating abundance of blossoms. Supplies of water and liquid manure, shading from the direct rays of the sun, frequent syringings, and clean glass are also indispensable to secure good results.

Edinburgh. James Scott.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Musa zebrina.—Where room plants are required, this might be grown with advantage. Plants of it in 6-in. or 8-in. pots would become large enough for the purpose, and, when well furnished with graceful dark green, brown-blotched leaves, and the pots covered with Club Mosses, they make effective subjects in vases set on pedestals or in similar positions.—C. S.

Cordyline indivisa from Seed.—It is satisfactory to find that, after many failures, this excellent decorative plant can be obtained from seed sown in this country. Comparatively few plants of it have hitherto been obtained in this way, but Mr. Williams has succeeded in raising a large batch of it in his nursery at Holloway.—C.

A Good Pelargonium.—There are now so many new zonal Pelargoniums that to select the best is a difficult matter; but one in the Pine-apple Nursery, named Comte de Gomer, appeared to be worth notice on account of its close resemblance in habit to the well-known and much-valued kind called Vesuvius, whilst its flowers are double the size of those of that sort, and of fine form and colour. It might with advantage be termed Vesuvius Improved.—S. C.

Grevillea robusta from Seed.—This is one of the most useful of green-leaved plants for decorative purposes, and it is now largely grown for market. Seed of it sown early in spring will, if properly attended to, produce fine, graceful-leaved plants, from 12 in. to 18 in. high by August. We lately saw a large houseful of similar-sized plants in Messrs. Rollisson's nursery, Tooting, the result of seed sown at the time named.—S.

PLATE CXLV.

DENDROBIUM GOLDIEI (Rchb.).

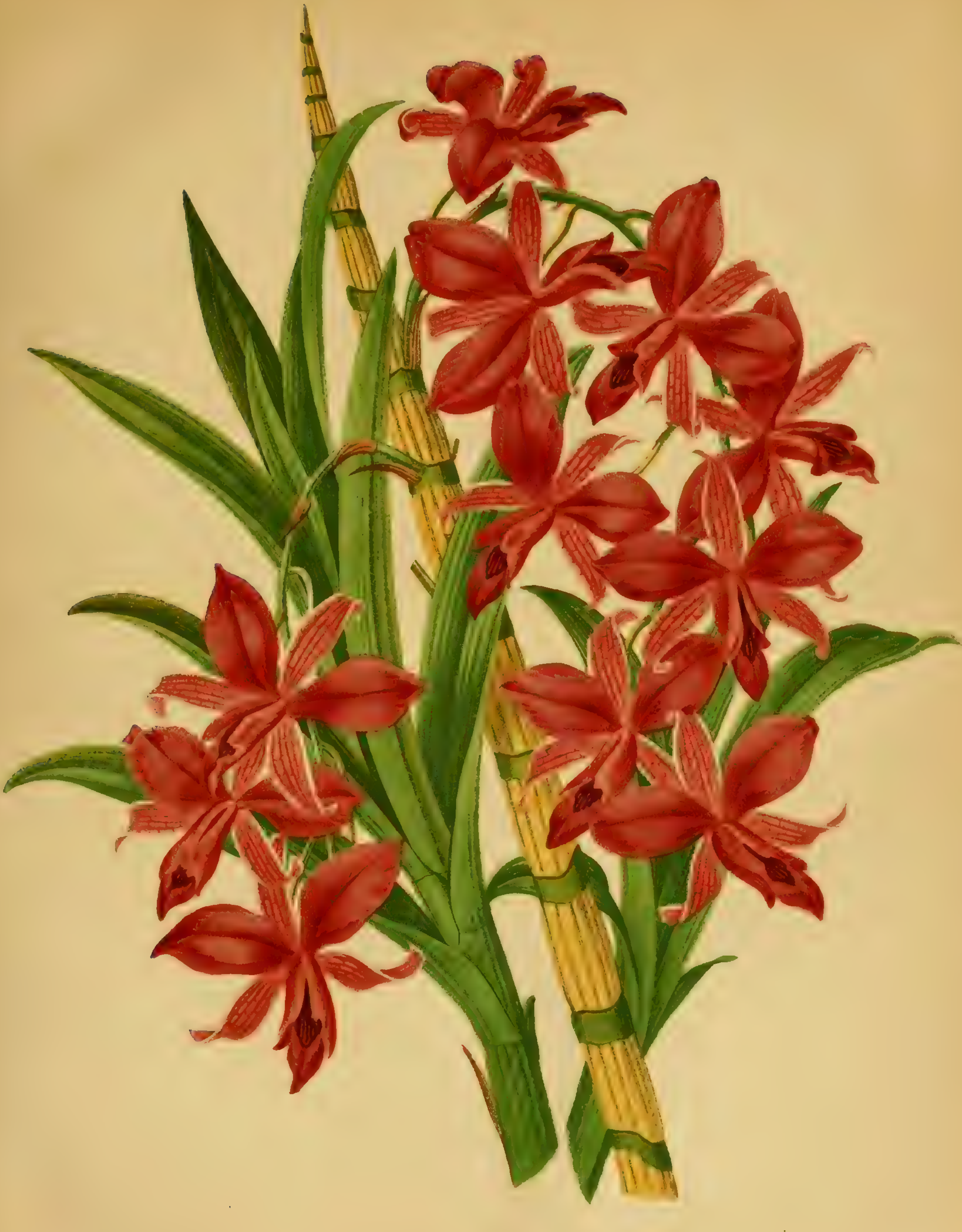
This beautiful species, at one time thought to be D. superbiens, but now found to be distinct, was discovered by Mr. Goldie, in the neighbourhood of Torres Straits. It is undoubtedly one of the most charming of all Dendrobes, and is a most profuse bloomer, as many as fifteen spikes having been found on an imported bulb, a fact which fully proves its free flowering qualities. Its blossoms, which are produced on gracefully-drooping, slender stems for a long time in succession, are most useful in a cut state for bouquet-making. The plant grows freely and succeeds well under the same treatment as D. nobile and similar kinds. It may be added that the longevity of the flowers of this Dendrobe is very remarkable; blossoms which opened on plants in Mr. Williams' nursery early in December, lasted in good preservation until early in March; therefore, plants of it kept in a moderately cool, dry temperature, would be attractive objects for at least two months in the year, and this during a season when good flowering plants are in most request. The plant from which our figure was prepared flowered for the first time last summer in Mr. Williams' nursery at Holloway.

SUCCESSIONAL FLOWERING OF EUCHARIS AMAZONICA.

Most cultivators who have liberal demands for the more choice flowers for cutting, and who have not, now-a-days, will readily endorse "J. P.'s" high estimation of the value and beauty of this plant. No doubt he is also right in condemning starving modes of culture that he affirms causes it to flower but scantily or not at all, but it is equally certain that the plant may be fed or forced into a flowerless condition. An excess of heat, or of food, and a constant uninterrupted supply of either, are likely to result in little or nothing but leaves. The secret of continuous, or rather successional, blooming of this fine plant consists in subjecting it to a series of sudden changes. So much has recently been written on the life history of Lily bulbs that one hesitates to dogmatise almost the life or flowering of any bulb without subjecting it to a series of experiments more searching and exhaustive than most of us can find time to devote to such purposes; but whether the same bulbs flower a second or a third time, or other bulbs produce the successive displays of bloom, the practical results of a chequered treatment of this fine plant are the same. Sudden and severe checks from moisture to drought, from feasting to starvation, from heat to cold, bring forth fresh crops of bloom. By this is not meant a few spikes sent up, as it were, in succession to a full harvest of beauty, but rather a second and a third harvest equal or superior to the first. To obtain such brilliant results there must be a forced rest or interregnum to growth, brought about by some such checks as those here indicated. Thus the application of a high temperature and liberal treatment brings forth yet other crops of blooms. Three or even four crops of flowers a year are thus possible, the plants being always under treatment, and never losing their foliage. Some of our finest plants have had six weeks' rest in the open air this summer, and responded to the genial temperature of the stove afterwards with a perfect forest of flower stems. The same plants are grown in the open air, and will be in flower again early in October. They also flowered in February and March, right up to May, and went out-of-doors immediately after a rest. Some of the plants remained out until the flowers opened, and flowers and foliage seemed all the more vigorous in consequence. It will thus be seen that a high stove temperature throughout the season is by no means necessary for the flowering of these grand plants in succession. On the contrary, severe changes of condition and treatment are the simplest, but most effective, means used to force the plants to flower freely several times a year.

D. T. Fish.

Acanthuses in Shade.—Where plants for indoors have to be largely provided, the Acanthus latifolius and mollis will be found to be most useful, not only on account of their beautiful green foliage fitting them so well for large vases, but from the fact that they retain their health and vigour, and continue to produce fresh foliage in positions so imperfectly lighted and ventilated that scarcely any other plant would exist for any length of time. Where sub-tropical bedding is carried on there is usually a quantity of such plants fit for lifting at this season, and which, if carefully potted and kept in partial shade for a few days, will remain serviceable during the whole of the ensuing winter.—James Groom.



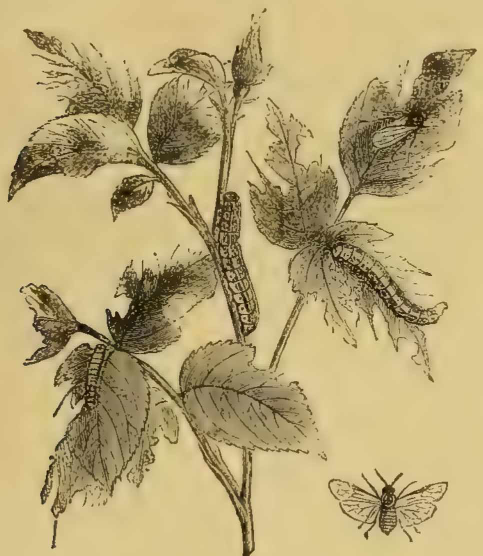
DENDROBIUM GOLDIEI

GARDEN DESTROYERS.

HYLOTOMA (TENTHREDO) ROSARUM.

(THE ROSE SAWFLY.)

The Rose sawfly is about three-tenths of an inch long and seven-tenths of an inch across the wings when fully outstretched. The head, thorax, and antennæ are of a brownish-black. The antennæ have only three joints; the wings are large and transparent, the upper pair being the longer, with the front margin much thickened, particularly at a point called the stigma, about two-thirds of the length of the wing from the base. The body is broad and flattened, and of a yellowish-brown colour, that of the female being furnished with saws, as described below. The eggs, about twenty-five in number, are laid in the spring, and placed each in a separate slit in the young wood of the Rose. The larvæ are hatched in about eight or ten days; their bodies are composed of thirteen segments, nine of which each bear a pair of legs. The head is yellow, with black eyes; the body is yellowish on the back, greenish-yellow on the sides, and white beneath; both back and sides are sprinkled with small, shining black tubercles, from which spring a few fine hairs. They increase in size very rapidly, and change their skins four times; they attain their full size in about a month, when they are about ¾ in. long. They then descend to the ground, bury themselves, and construct a double cocoon in which to undergo their change to the pupa state; the inner cocoon is of a much closer and more compact texture than the outer one. The larva remains in this cocoon for nearly a month before becoming a pupa, after which another month elapses before the perfect insect appears. The larvæ of this second generation in due course bury themselves in the ground and form their cocoons, in which they pass the winter as larvæ, not changing into pupæ until the following spring.



The Rose Sawfly—Hylotoma (Tenthredo) rosarum.

The sawflies belong to the natural order Hymenoptera (or membranaceous-winged), from the Greek *hymen*, a membrane, *pteron* a wing. This order comprises all the bees, wasps, ants, ichneumons, gallflies, sawflies, &c., all of whom (with the exception of a few wingless species) are furnished with two pairs of wings, both of which are used in flight, and are long, transparent, and veined. The larvæ or grubs are legless, with the exception of those of the sawfly. When in the pupa or chrysalis state, the limbs of the perfect insect can be seen cased in sheaths and folded over the breast. The sawflies derive their name from the very curious and interesting organs with which the end of the bodies of the females are furnished, and by means of which they cut slits in the leaves and young shoots of plants, in which they deposit their eggs. These organs consist of a pair of saws placed side by side, contained in a sheath formed by a pair of flattened plates. These saws are somewhat curved, are very finely-toothed, and their sides are grooved transversely. When in use they are protruded from the sheath and worked rapidly and alternately, one being pushed forward whilst the other is withdrawn; in this manner a slit is very quickly made, the egg is then passed between the saws into the slit, and the insect prepares to form another slit. Each egg is accompanied with a drop of frothy matter which, it is imagined, prevents the wound in the leaf from closing.

This insect in a perfect state is very common and may be found from May till August; as it only feeds on the nectar and pollen of flowers, it is quite harmless in the garden. The larvæ, on the contrary, do a great amount of injury to Roses and Briers by eating their leaves, at times only the midrib and larger veins being left. They attack all kinds of Roses, but the Banksias and Tea Roses suffer less than others. Some Rose growers on the Continent plant Parsley near their Roses, as the larvæ are particularly fond of that plant, in order to attract them from their Rose trees. I am unaware if this has been tried with success in England. Birds and wasps destroy great numbers, many are attacked by a small parasitic insect (one of the Chalcididæ), which lays its eggs in the larvæ, the grubs from which eventually kill them. The perfect insects should be destroyed whenever they are found, particularly in the spring, when they are sluggish and may be easily caught.

S. G. S.

FERN CASES AND FRESH WATER AQUARIA.

The following remarks on this subject were made by Mr. J. C. Niven in a lecture lately delivered to the Hull Literary and Philosophical Society. He said that the important principle in the Fern case consisted in the fact that as rapidly as the moisture was evaporated from the soil it was condensed on the inner sides, and trickled down to its original source, but he here pointed out the fallacy of the popular idea that plants grown under these conditions never require watering. This was found in practice to be a mistake. It would be obvious to all that as the water condensed on the glass it ran down the sides into the drainage of the stand, and that a large percentage of it would thus be placed far beyond the influence of the soil; the latter would, therefore, become too dry to support vegetation in a healthy condition, and in his experience the failure of not a few attempts in the management of these cases had been distinctly attributable to this erroneous, but very general, impression. By way of answer to the query, Why are Ferns, Club Mosses, and their allies so well adapted to these confined conditions of culture? Mr. Niven drew attention not only to the position they generally affect at the present day in our deep ravines and caverns, but also to that ancient period of time—so charmingly depicted by Hugh Miller, when the surface of our earth was enshrouded in a cloud of misty evaporation, a condition under which our small Club Mosses were represented by giant trees of the same type, whose silicified and carbonised remains might be seen in nearly all museums. The lecturer then dealt with the conditions of successful culture under three heads; first, the nature of soil best adapted for the purpose; second, the sorts of Ferns, or, at least, a selection of them best adapted; and third, some general hints as to after management. In the matter of soil nothing was superior to the London peat, with its dense texture. This, with a mixture of silver sand, some burnt soil, and charcoal—the latter two materials acting as valuable antiseptics—constitutes the best elements of successful culture. The soil should have below it a good open space of potsherds for drainage. The lecturer then referred to the kinds of Ferns best adapted by their small size of growth, and various other qualifications, for culture under a glass shade, and then said, with respect to after management, that he strongly recommended the giving of air to Fern cases by the complete removal of the shades for, say, a quarter of an hour or more, selecting the morning as the best time for this operation, and thereby the growth of a fungoid character, which readily developed itself on decaying particles of the fronds, would be checked. He further cautioned people against sudden changes, such as were frequently and thoughtlessly made in the depth of winter, when possibly the Fern case would be removed, say from its usual position in the warm temperature of the dining-room to a cold hall table, or, worse still, to a landing window, where, possibly, before morning, the frost would have made itself visible in a lovely, but fatal, crystallisation on the inside of the shade. Some cases, he said, were supplemented by an aquarium, which occupied the centre, containing that popular water plant the Vallisneria, with sundry small fishes; this arrangement had added additional interest. He stated that many attempts at the cultivation of the Vallisneria had failed from the erroneous idea that it needed no soil. True, the American Water Weed is independent of an anchorage of any kind, but the Vallisneria dearly loves a rich alluvial clay, wherein to perfect its growth.

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—Old plants of these should have been established in their blooming pots before this month; still, if they have not been potted it will be desirable to do so rather than allow them to remain in the same pots another season. Offsets that were put into small pots, five or six in a pot, must now be potted off if they are well rooted. Offsets are sometimes very small, and, therefore, small pots must be used for them. I use what are termed thumbs, but they are deeper than usual in proportion to their width. The object in using such pots is to be able to accommodate a larger number in a certain space than could be done if the pots were shallower and wider; it may be as well to state that Auriculas thrive well in such pots. Plants that are throwing up trusses must have the flower-buds pinched out before they open; autumn trusses exhaust the plants if the flowers be allowed to expand. Green fly must be destroyed by fumigating, brushing them off, or dusting with fine, dry Tobacco powder. All offsets that have formed roots should be carefully removed from the parent plant with a sharp knife and be potted in light soil with a little sand placed at the base of the offsets.

Carnations and Picotees.—From the middle to the end of the month the earliest-rooted layers may be taken off, and if the weather be warm and sunny, some shading should be placed over them. Place the frame in which they are to be put with its back to the south, which will further tend to maintain a cool atmosphere round the plants. It is not desirable to remove the layers when the soil is wet and sloppy.

Dahlias.—At this, the height of the blooming season, the cultivator will be daily amongst his plants. These will now be of large size, and if the blooms have been thinned out, lateral growths will continue to be formed, and must be pinched out with the finger and thumb. It is bad management to have an over large proportion of leaves to that of flowers, which the removal of the lateral growths tends to improve. Exhibitors must select the best flowers and shade them by drawing their stems through a slit in a board about 9 in. square; a 7-in. pot with a bit of potsherd placed over the hole answers well as a shade.

Hollyhocks.—Continue to take cuttings from eyes formed on the side growths, or from shoots thrown up from the base of the plants. If it be intended to save seeds, the decaying flowers should be removed before they injure the seed pods; fading flowers spoil the effect of the spike, and it is best to remove them before they have become unsightly.

Gladioli.—It is now almost too late to hybridise any of the flowers of these for seeding; but if any desirable sorts intended to be crossed did not flower sooner there can be no harm in setting the blooms. If October should be a fine month, warm and dry, some few seeds might be matured. Plants still throwing up their flower spikes should have sticks placed to them, and the hoe should be kept at work between the rows; the bulbs ripen better if this is done. Seedlings in pots should be watered cautiously; allow the soil to become dry before watering, but it is not well to dry it so much that the small plants are checked in their development. The seed pods should be gathered as they ripen and be placed in an airy room to dry.

Phloxes and Pentstemons.—It is a good time to put in cuttings of the last-named; the small succulent shoots are the best. They should be inserted in small pots, and they will strike roots in a few weeks if placed in hand-lights or in a cold frame behind a north wall. The flower spikes should be fastened to sticks as the first blooms open. They will be found to be very useful in a cut state. Cuttings of Phloxes may also be put in and managed in the same manner. As those in pots go out of bloom the stems should be cut over at once, and the pots placed out-of-doors on a hard bottom.

Pansies.—Cuttings of these may also be put in. Small slips with small roots attached to them can now be obtained from the centres of the old plants, and if pricked out in fine soil out-of-doors they will soon become established. They may be either put into boxes or pots, whichever the cultivator prefers. Plants in beds intended to bloom well in October should now be surface-dressed; all the flowers ought to be removed and the growths pegged down close to the ground. Sow seeds to produce plants that will flower from the end of April all through the season. Seeds may also be saved by gathering the pods and drying them in an airy room.

Tulips.—The ground for these should be prepared this month. Trench it 2 ft. deep at least, and mix some rotted manure with the soil. Prepare some fibrous turfy loam, place 3 in. or 4 in. of it on the surface of the beds, and in this the bulbs should be planted. Place some sharp river sand round each root at planting time, which should be in November.

Pinks.—If the ground be ready for these they may be planted out at once. The soil should be in good order, from being turned over several times. If this has not been done, better delay the planting a few weeks. It is a good plan to place some decayed turfy loam on the surface of the beds before putting out the plants.—J. Douglas.

Wigandias, Ricinus, Cannas, Maize, and other fine-foliaged plants of gross feeding habits should be well supplied with manure water, and in sufficient quantities to soak the whole of the soil, as their principal feeding roots penetrate far down and derive little or no benefit from mere surface wetting. Autumnal gales may now be expected, and, in order to prevent injury occurring to such plants as the above, they should at once be securely staked and tied, or the force of wind, with the hold it has on such a mass of leaf surface, will soon commit sad havoc amongst them.

Indoor Plant Department.

Stoves.—Reduce the shading here to a minimum, but do not remove it altogether, for sometimes we get extremely bright weather even up to the end of the month, by which very much injury is done by scorching, especially as it is necessary now to use much less moisture in the atmosphere, as well as to admit more air, both of which render the foliage more liable to scorch. The object of the cultivator in this matter ought to be to just shade sufficiently to prevent injury, but no more, not even for a single hour. This is a point the importance of which I would urge, as so much depends upon the manner in which stove plants are treated in this respect during this and the following month, with a view to their flowering freely the ensuing season. From Allamandas, Clerodendrons, and Bougainvilleas gradually withhold water, allowing them to flag for a day or so before giving any, and then only give it in reduced quantities; by continuing this treatment the soil in the pots will gradually get to that (at this time of year) necessary condition as to moisture, that it contains just sufficient moisture to maintain the roots in health without inducing any disposition in the plants to form more wood. Stephanotis requires to be kept after this time compartively dry; but, unlike the preceding plants, being evergreen, it will not answer if the soil gets too dry, as the leaves would suffer and drop off. Dipladenias should also be kept drier than when it is desirable to encourage active growth, yet not so dry as Stephanotis. Ixoras, again, must be kept at this season drier than when their growth is most active, but must never be allowed to get too dry, or they will suffer to an extent that will take the best part of a season to recover them. Nothing adds more to the good appearance of a stove than a few suspended baskets of such things as Hoya bella or the different varieties of Æschynanthus. Of the latter, A. splendens and A. Boschianus are most desirable plants, of graceful, drooping habit, brilliant, and free flowering, growing freely in an equal mixture of loam and peat, with sufficient sand to ensure porosity.

Azaleas.—The late-blooming plants will now be setting their flower buds, and should be no more shaded. The syringe should also be withheld, simply throwing a moderate amount of water about the floors and paths, at, say, four o'clock, when the house should be closed, allowing the temperature to rise by sun-heat, which is at once the most genial to the plants and the most economical. Continue this practice until the flower buds are up as large as small Camellia buds. If their inveterate enemy, the thrips, makes its appearance, give it no quarter; any delay in this matter entails a serious after expenditure of labour. Get all the plants, large and small, tied before they have quite completed their growth and the wood becomes hardened thoroughly, as, after this, they are too stiff to regain the natural position of their shoots after tying.

Solanum capsicastrum and S. pseudo-capsicum that were planted out-of-doors in spring in a warm, sunny position, although not so forward as they would have been had the weather been warm earlier, should now be lifted and potted, as it is necessary to get them established before the season gets too far advanced, or the berries will not colour so well, neither will the plants retain their foliage satisfactorily until the spring. Except in the case of large plants above the size that these Solanums can be grown to be propagated from cuttings or seeds in a single season, 6-in. pots will answer well, for if the roots can be got into them without much pressure they are sufficiently large. Soil in which Cucumbers have been grown will answer the purpose just as well as new loam. It will require sand enough added to it to keep it from getting impervious to the liberal quantities of water which these Solanums need. Put 1½ in. of crocks in the bottom of each pot with a little half-decomposed leaf-mould on the top; pot them moderately firm, and do not fill the pots too full. The day before lifting the plants they must be well soaked with water, which will prevent their roots from being so much broken in removal; take them up with a fork carefully. It will be necessary to shake a good deal of the soil from them to admit of their going into pots of the size just named; as soon as they are potted they must be thoroughly soaked so as to make the soil quite moist; this advice may appear very different from that which is generally prescribed for most plants, but the nature of these Solanums is such that they will bear it with impunity; and if not done the leaves will flag, when they are certain to lose the deep green colour that adds so much to their appearance, to secure which and a greater quantity of berries, they are recommended to be thus planted out in preference to growing them in pots through the summer. If a pit or frame can be spared so as to keep them close with little air admitted and shaded from the sun until they have got established, that will be a suitable place for them. If they cannot be so treated, they must be placed at the north side of a wall or close hedge, so as to prevent the sun from shining upon them for three weaks, by which time they will have made new roots sufficient to support them. During this time sprinkle with water overhead every evening whilst the weather is dry. Examine closely in order to see that no aphides infest the leaves, for if only a few of these exist they will increase apace when taken indoors. If it be desirable that a portion of the stock should have their berries coloured early they ought to be placed in a little heat; about 50° in the night will soon give them their bright orange tint. The remainder under ordinary greenhouse warmth will form a succession. If managed in this way these most useful decorative plants can be had in better condition than by any other method. Nothing will bear confinement in a room better, or will be more suitable for the purpose when the berries are ripe.

Herbaceous Calceolarias should be pricked out in seed-pans as soon as they are large enough to handle; there are many good "strains" of these plants now in existence that are not nearly so delicate in constitution as those with more finely-formed flowers that were grown some years ago; those to which I allude make plenty of large leaves, are of a dwarf, compact habit, producing profuse heads of bloom, and are very desirable to grow; the principal points needing attention are to keep them scrupulously free from aphides, and to feed liberally with manure water in the spring when they are making active growth; they delight in rich open material from their first stage onwards. For this first pricking out sift the soil, and add to it one-fourth of fully decomposed manure and leaf-mould in equal parts and a sixth of sand; the pans used may be from 8 in. to 12 in. in diameter, with 1 in. of crocks in the bottom, and a little fibrous material over to keep the loose soil out of the drainage; on this put the prepared soil, pressing it moderately, but not too close, filling up the pans to within 1 in. of the top; put in the plants about 1½ in. apart, and sprinkle overhead when each pan is filled. Calceolarias are moisture-loving plants, and must never be allowed to get dry at the roots or be subjected to an over-dry atmosphere. Keep them near the roof of the pit or house in which they are placed during the autumn; when they require more room they must be potted off singly.

Hyacinths, Tulips, Crocuses, and Narcissi.—These should now be potted; it is not well to defer procuring them until the stocks are somewhat run through. Where any considerable quantity of forced flowers are required early, a good supply of Roman Hyacinths should be used. These are smaller than the ordinary type, but very handsome. They should at once be potted, putting five or six in a 7-in. pot. All the above varieties of bulbs ought to be potted as soon as they are obtained, as they will very shortly evince a disposition to grow, and the sooner they are in the soil under these circumstances the better. A few directions may be useful to those who have not had much to do with this class of plants. For Hyacinths 6-in. pots are the most convenient, and look the best. Ordinary loam, wherein is a moderate quantity of sand, leaf-soil, and rotten manure is the most suitable material in which to grow them. Put at the bottom of the pots ½ in. of broken crocks; on this place 1 in. of dry, rotten manure, and fill up to within ¾ in. of the rim, making the whole moderately firm; then take out of the centre as much of the soil as will allow three-fourths of the bulb going below the surface, pressing it firmly round on all sides. Narcissi require to be similarly dealt with. Three Tulips may go into each pot of the above size, placing the bulbs just below the surface. For Crocuses, half fill the pots with soil, pressing it firm; then put in half-a-dozen bulbs, and fill up with soil. The reason why Crocuses require to be potted deeper than the others is that each year they form a new corm, or bulb, on the top of the old one, the latter decaying; and if there was not a sufficient depth of soil over them, this natural process could not occur. When all are potted, plunge them out-of-doors, as close as the pots will stand, in a bed of coal ashes, covering them with 6 in. of the same material; and here allow them to remain until they have made a good quantity of roots.

Chrysanthemums that are planted out in the open ground with a view to layering the shoots and afterwards transferring them to pots for blooming should now be layered. When the soil of the site in which the plants are growing is of a loose, sandy character, they may be layered in it without any addition, but when it is of a strong, adhesive description, it will be necessary to use some purposely prepared. Such as has been employed in Cucumber or Melon beds will do, provided it has enough sand added to it and a little rotten manure or leaf-mould sifted; this should be laid in hills in the manner in which Carnations are treated for layering. The shoots must be bent down and the leaves stripped off at the place where they are intended to be layered, which may be a little below where the flowering growths branch out. Tongue the shoots, that is, split them longitudinally upwards for about 2 in., passing the knife half-way through them, and then bury the tongued part for about 8 in. of its length in a little hill of soil, already described, securing it with hooked pegs strong enough to keep it firm in its place; let the soil be regularly watered, and in a few weeks the shoots so treated will form a mass of roots, after which they may be severed just below where they are layered and potted. It is necessary, as has been stated, to have the soil of a light character, or the roots will get broken when taken up, in which case the blooms will suffer. By this method a very large quantity of flowers can be obtained from pots of a small size.

Indoor Fruit Department.

Peaches and Nectarines.—Trees trained to wires or upon walls under glass should be examined as soon as the leaves are all cleared off; and, if it be found that scale has in any way affected their bark, measures should at once be taken to stamp out this pest. If the trees be thoroughly ripened, they may be pruned, taking care to save all natural spurs, leaving the best placed young wood, and cutting back only when three buds are discernible. Single buds are, as a rule, flower buds only; but the centre buds of the triplets are wood buds, and lead up the sap when growth commences. Laying the shoots in thickly is an evil which should be guarded against. With healthy, well-ripened trees, we never found it difficult to get a fruit to each square foot of surface. Cut out every particle of dead wood or decaying spurs, and, when this is done, commence the destruction of the scale. Get a quantity of warm water, and mix soft soap in it till it is frothy; then let careful hands, with short-haired brushes, commence at the trunk of the trees, and wash every part of the bark, both of old and young wood. Let the loosened branches hang suspended, so that the whole of the woodwork may be washed and the soapy water enter every crevice. We have used turpentine and other destructive agents for cleansing, but if the structures are to be painted, this washing is unnecessary. The washing of the trees may have to be repeated before forcing begins. All the surface soil inside the buildings may be taken away, and the trees kept cool and airy.

Figs may be washed in the same way as Peaches after any wood which is crowding the tree is cut away; when the leaves have fallen naturally off pot trees, they may be placed in a position where the sun will have full power on them; but depriving them of water will injure the trees materially. Crops, to ripen in November, may have a good soaking of manure water, the surface being kept loose and open afterwards.

Cucumbers may be planted when the plants are strong enough; rotted turves, mixed with decayed leaf mould, suits them well. If bottom-heat is supplied by hot-water pipes, there should be provision made to prevent the roots being scorched, as if the pipes come in contact with the soil, a dry unhealthy position will soon be occupied by the roots. Little soil may be given at first, but pieces of turf should be added as the roots appear.

Hardy Fruit.

Peach Borders.—Should there be dry weather, it will be necessary to apply water freely to outside Peach borders much later than they usually receive it; if this be not done, the leaves will suffer and fall off sooner than they ought to do, which in all cases has a prejudicial effect upon the strength of the trees, and on their bearing another year. The application of water to these trees will be most needed where any kind of vegetable crop is grown on the border, and which from the moisture it extracts from the soil renders the trees in a worse condition as to root moisture than where the border is uncropped; do not confine the application of water, as is too frequently done, merely to a few feet round the stem of the trees, where it is really least wanted, but apply it over the whole extent of the border occupied by the roots; keep all the shoots required for next year's bearing laid in close to the wall, a position in which they will get ripened much sooner than if left hanging loose; this is most necessary in late localities where there is a difficulty in getting the growth matured.

Kitchen Garden.

Potatoes.—Late crops should now at once be taken up, as after this time there is nothing gained by leaving them longer in the ground. Where considerable quantities are grown, it often becomes a difficult matter to find room for storing them without resorting to clamping; but, unless where unavoidable, this method of keeping them should never be practised, more especially in a season like the present, when disease has been so prevalent, rendering it necessary to go over them several times during the autumn to remove any that may be affected.

Planting Cabbages.—A good piece of ground, upon which to plant early Cabbages, should now be dug over. Those sown in July will, by this time, be large enough to plant out. It is not well to manure heavily at the time of preparing the ground; for, if much is put in for this crop, it has the effect of inducing over-luxuriant growth, which should be avoided. Although the Cabbage is very hardy, yet, if the plants are forced into rank growth, they are often cut off in severe winters; consequently, it is better at this season to plant on soils that have been manured well for some previous crop. Ground where Onions have been grown, and which by this time will be cleared, will, if simply dug over, answer all purposes. In planting at this season some distinction should be made in the different kinds; small-growing sorts, such as the Cocoa-nut, may be put in 9 in. apart in the rows with intervals of 2 ft. between the rows. In the spring, as soon as they are at all fit for use, every other one can be taken out, leaving the remainder to develop more fully. Larger kinds, like Enfield Market, should be put in 1 ft. apart in the rows, in like manner taking out in the spring every alternate Cabbage; these larger growers should also have 2 ft. between the rows. When putting them out use a little soot and lime to each plant; for, although this autumn-planted crop is not liable to suffer through clubbing in the way that the spring and summer plantings do, still these have the effect of keeping away slugs. In planting all the Brassica family, amateur gardeners are apt to err in either not putting them in sufficiently deep, or go to the other extreme of half burying the leaves. If the former mistake is made the wind blows them about in a way that does much mischief; and if too deep they do not do well. Whatever size the plants are they should be planted so that the bottom leaves will be on a level with the surface; this does away with the necessity for making the ridges too high in hoeing up. If the land is moderately dry it is a good plan to make with the hoe shallow trenches, 5 in. or 6 in. deep, planting in the bottom of these. The advantage of this is, that a portion of the soil in the so-formed intervening ridges can be drawn to support the plants before winter, and the remainder, thus a little elevated, acts as a protection from cutting, frosty winds, and in the spring can be put to the plants, still leaving them nearly on a level with the surface, thus enabling the whole of the roots to receive fuller benefit from rain than if placed on a high ridge that throws off the water. In ground that is insufficiently drained this plan will not answer for autumn planting, as the crop would be liable to suffer from too much wet. All the Cabbage family are surface-rooting, and do not push their roots down to any considerable depth, consequently, unless where the soil is extremely shallow, the above practice may with advantage be followed. For the summer crops this system can also be recommended, as it admits of the plants being earthed up sufficiently without a ridge of any consequence being formed, and which, for the reason above stated, is better absent. When the space intended for the principal crop is filled, it is advisable to prepare a small corner in which to put some plants for a reserve; these may be pricked out about 6 in. apart, and will come in for filling up any gaps that may occur through the effects of a severe winter.

Cauliflowers that were sown in the middle of last month will now be ready to prick out, and those intended for early use next spring, and which are to be protected during the winter by hand-lights, ought to be pricked out in them at once. Double or even treble the number of plants intended to stand may be planted in them and drawn out as growth progresses, and transplanted in other favourable positions as soon as the severity of winter is past. Of course, the covers of the hand-lights will not be required for use till there is danger of injury from frost. A batch may also be pricked out at the bottom of a south wall and left to stand the winter in that position.

Lettuces.—Make a last sowing in the open air of Lettuces. The Tom Thumb is a beautiful little Cabbage Lettuce for sowing now for framework by-and-by. It is very hardy, occupies but little space, and turns in rapidly. The brown Cos should also be sown now for spring planting. A last sowing of Endive may also be made now on a dry, warm border.

Extracts from my Diary.

September 16.—Sowing Red and White Turnip Radishes in cold pits. Pricking out Cauliflowers and Red Cabbage plants. Clearing off a piece of Turnips, and heavily manuring and digging the ground for Coleworts. Clearing out Melons from pits, adding a little more soil and manure, and planting them with dwarf Beans for winter bearing. Tying up Lettuces and covering up Endive to blanch. Cutting back all young growth on Tomatoes, and exposing the unripe fruit to the sun. Turning a large heap of manure, and adding a little salt and soot to it for general use. Clearing off the surface of early Vine border, and giving it a top-dressing of loam, horse manure, and coal ashes.

Sept. 17.—Potting Dutch bulbs in a mixture of loam, manure, charcoal, and sand. Filling up all spare frames with Lettuce and Endive. Dressing Early Black Hamburgh Vines with composition to kill insects. Erecting a temporary frame over pot Strawberries on which to place spare lights to throw off heavy rains. Rolling newly-made gravel walks. Looking over all young fruit trees, and applying new ties and stakes where necessary. Gathering Hawthornden, Cellini, and Golden Pippin Apples; also a few Golden Drop Plums.

Sept. 18.—Potting off variegated Pelargoniums. Putting in another batch of Osborn's forcing French Beans and Ashleaf Kidney Potatoes that have been previously started in pots for forcing. Roping Onions. Washing woodwork in houses, and, when wet, cutting shreds and making labels and flower-sticks.

Sept. 19.—Putting in cuttings of Cerastium under hand-lights. Potting off Centaurea candidissima as soon as rooted; also putting a few Primulas and Cinerarias into their flowering pots for early blooming. Weeding and thinning out all overgrown Parsley. Hoeing amongst all late-planted Endive and Lettuce. Putting hay-bands round Cardoons and earthing them up.

Sept. 20.—Putting in Tomato cuttings to furnish plants for early fruiting. Shaking out and repotting old plants of tricolor Pelargoniums. Thinning out Endive and Lettuce. Manuring and roughly digging the ground previously occupied by Cauliflowers. Weeding and cutting the runners off pot Strawberries. Preparing frames for Cauliflower plants by putting a thick layer of green turf Grass side downwards, and then 1 in. of good mould in which to prick out the plants, which are placed 6 in. apart each way. Gathering Berberries, Reine Claude de Bavay, and Coe's Golden Drop Plums.

Sept. 21.—Putting in Tom Thumb and Indian-yellow Pelargoniums in large store boxes and pots. Earthing up Celery when the soil is dry. Thinning autumn-sown Carrots and Turnips. Weeding Box edgings. Gathering Gansel's Bergamot, Citron de Carmes, and Dunmore Seedling Pears, and Ribston Pippin Apples. Fruit in use for dessert: Pines, Grapes, Melons, Peaches, Nectarines, Figs, Plums, Pears, and Apples.—W. G. P., *Dorset.*

The Wild Garden in America.—One of the most interesting features of this place (Brookline) was the wild garden, that is, a wooded dell all growing over with Vines, shrubs, Ferns, and the like, the most enjoyable part of the garden in spring. In this place are naturalised hosts of Crocuses, Daffodils, Jonquils, Squills, Tulips, Irises, English Primroses, Phloxes, and many other flowers that come up and blossom in perfection in spring, while their location is open and sunny, owing to leafless trees growing overhead. During the summer time they are sheltered, shaded, and undisturbed, just as they prefer to be. It is not the winter's severity so much as the summer's sun that, in this country, proves fatal to so many European woodland plants. For instance, English Primroses growing in a shady rockery here live throughout the winter and blossom splendidly in spring; but in the open garden border they invariably die. —"Moore's Rural."

TO THE FINEST OF FRUITS.

(Sung in August by a Sub-Editor.)

Let others praise the mellow Peach,
The luscious Grape, the golden Pine;
But oh! within my modest reach,
I know a fruit that's more divine.
'Mid fragrant groves of Orange flower
Let bridegroom roam! But weave my crown
Of Gooseberries that, sweet or sour,
Bloom when the world is out of town!

When silence holds the Lady's Mile,
And daily sheets, grown empty too,
Hail, with a glad and greeting smile,
The little earthquake from Peru—
The avalanche—the hot pursuit
Of luggage lost—all things that bore!
Say, what can match the cheery fruit
That blooms till Town is full once more?

—"Punch."

GARDEN BOTANY.

(Continued from p. 229.)

The Fruit.

Definition.—As understood by most botanists, the fruit of a plant in a botanical sense is much the same as the popular conception, with the addition that any seed-vessel, edible or otherwise, is a fruit. Generally speaking, the fruit affords characters by which the order, genus, and sometimes even species of a plant may be determined; hence the importance of comprehending the nature of the principal modifications. The fruit is the mature pistil of a flower and whatever has grown around it, as a Pea pod or an Apple; or it is the mature pistils of a number of flowers in a state of cohesion, as the Pine-apple; that is to say, in the Apple we have an example of a fleshy fruit the product of one flower; in the Pine-apple an example of a fruit consisting of the consolidated fleshy pistils of a number of flowers. When the mature pistils are free (separate) from each other, although they may be closely appressed, as in a cluster of Grapes, each berry is a fruit. The terms superior and inferior, apocarpous and syncarpous have the same signification as when applied to the immature pistil. The wall or shell of the fruit, or whatsoever encloses the seed or seeds, is the pericarp, which dehisces (bursts or splits open) in some way to free the seeds, as the seed vessels of Poppy, Wallflower, Antirrhinum, &c.; or it remains closed until it decays, as the Apple, Gooseberry, &c.

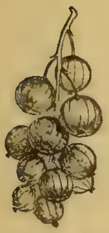


Fig. 564.—Cluster of berries of Currant.

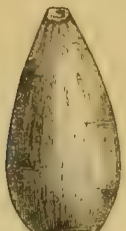


Fig. 565.—Fruit (berry) of Opuntia vulgaris.

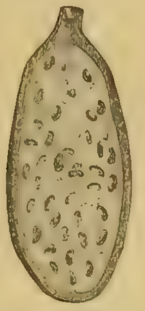


Fig. 566.—Section of the fruit (berry) of Opuntia vulgaris, showing the numerous seeds immersed in a fleshy pulp.

Classification of Fruits.—It is no easy matter to establish a sound and intelligible classification of fruits, inasmuch as many pistils which are identical in nature and almost alike in a young stage develop into very dissimilar fruits. Furthermore, external forms are characters of only secondary importance. Some writers have distinguished nearly fifty different kinds of fruits by special names, but many of these modifications are restricted to a single family, and in a few cases to a single genus. Such a classification, therefore, is unnecessarily cumbersome; indeed, very few distinctive terms are now employed in descriptive botany, it being more convenient to use as few as possible and describe their modifications where necessary. Fruits may be primarily divided into simple (proceeding from one flower) and collective (proceeding from two or more flowers). It is understood that a fruit is simple in all cases where the contrary is not stated.

Simple Fruits.—These present a great variety in external form, size, and other particulars, but, with few exceptions, they may be referred to one or the other of the following types. They may be subdivided into dry and fleshy fruits according as the pericarp of the ripe fruit is dry or fleshy.

Simple Fruits having a Fleshy Pericarp.—This subdivision includes many familiar fruits, familiar because they are edible. They may be referred, excluding a few modifications peculiar to certain species or small groups of species, to three or four types, all of which do not split open to release the seeds, or what is called indehiscent.

The Berry.—This term is popularly applied to fruits of the most diverse nature and structure, but in its more restricted botanical signification a berry is a fruit in which the whole substance of the pericarp, excepting the outer skin, is fleshy. Occasionally the walls of the cell or cells (for a berry may have one or more cells) containing the seed or seeds is of a different texture, though never stony. Sometimes the berried fruit resulting from a pistil having an ovary with more than one cell becomes one-celled by the abortion or obliteration of the other cells. The Gooseberry and Currant (fig. 564) are familiar examples of berried fruits. These fruits, as well as that of the Indian Fig (Opuntia vulgaris—figs. 565 and 566), are inferior in the botanical signification of the word, and the seeds are embedded in the pulp. The fruit of the Barberry is also a true berry, and likewise the Grape, though both of them result from superior ovaries. The Melon, Cucumber, Gourd, and indeed nearly all the members of the Cucurbitaceæ, have fruits of the berry type, though the term pepo has been proposed for the fruits of this family. In its nature a Melon is as much a berry as a Gooseberry, and clashes only in size with the general notion of a berry, but the Red Bryony (Bryonia dioica), the only member of the same family native of this country, has a genuine berried fruit not larger than a Black Currant. We may conclude this paragraph by observing that the Strawberry, Raspberry, Blackberry, Mulberry, &c., are fruits belonging to wholly different types from the berry, and their nature is explained under other heads.

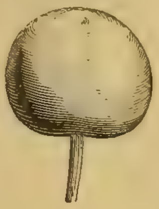


Fig. 567.—Fruit (drupe) of Cherry.

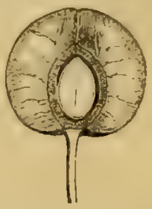


Fig. 568.—Section of a Cherry, showing the solitary seed within the stony endocarp.

The Drupe.—The chief distinction between a berry and a drupe is that the inner layers of the pericarp of the latter become very much hardened, so that after the fleshy part of the fruit has been removed the seed still remains enclosed in a shell. To be more explicit, the term is applied to the stone fruits of gardeners, as well as to some others described below. What is commonly called the kernel is the seed, and the shell or stone a part of the pericárp. When the pericarp is thus differentiated into distinct layers the stone is termed the endocarp, the fleshy portion mesocarp, and the outer skin epicarp. To this category belong the Peach, Almond, Apricot, Plum, Cherry, &c., each and all of these having normally one-celled and one-seeded fruits (see figs. 567 and 568). The Walnut, too, is a drupe, though the fleshy covering is removed before the fruit is brought to the table, except when pickled, and in this state the true nature of the fruit can be recognised. The Cornel (figs. 569 and 570) has a drupaceous fruit containing two stones, and the Medlar (figs. 572 and 573) is a fleshy fruit containing five stones. Cratægus Oxyacantha, the Whitethorn, has a similar, though smaller, fruit. The Raspberry (fig. 574) has an apocarpous pistil consisting of numerous carpels, each

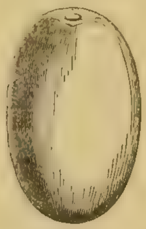


Fig. 569.—Fruit (drupe) of Cornus mas.

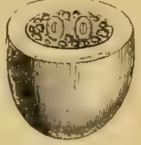


Fig. 570.—Transverse section of two-celled two-seeded drupe of Cornus mas.

of which becomes a small drupe, and the ripe fruit is a cluster of drupes crowded upon a cylindrical receptacle. It is of the same nature in the Blackberry and its allies, and totally different from the Mulberry, which is described under "collective" fruits. Drupes, or drupels as they are sometimes called, of an apocarpous pistil differ only in having a fleshy mesocarp from the achenes of some apocarpous pistils (see the paragraph on the achene).

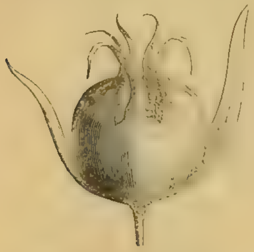


Fig. 571.—Fruit of Medlar.

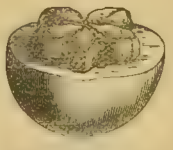


Fig. 572.—Fruit of Medlar, with a part of the flesh removed to show the five stones.

The Pome.—This can only be regarded as a modification of a drupaceous fruit, differing from a true drupe in the endocarp, or inner layer of the pericarp, being leathery or cartilaginous, not of a woody or bony consistence: we need only name the Apple, Pear, and Quince. W. B. Hemsley.

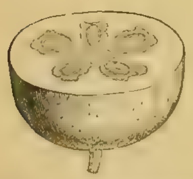


Fig. 573.—Transverse section of five-celled five-seeded drupe of Medlar.

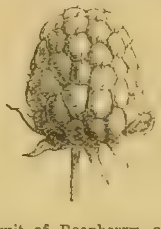


Fig. 574.—Fruit of Raspberry, consisting of a cluster of one seeded fleshy drupels.

Liberian Coffee.—The transplantation of this plant from its native soil to Ceylon and other countries has been attended with such good results, that the tree is likely to supersede the Coffea arabica, the species now usually cultivated. Of little importance in its native country, the Liberian Coffee becomes astonishingly productive when placed in the best plantations alongside or very close to its better-known rival; and it has this peculiarity, that, whereas the Arabian Coffee flourishes at an altitude of from 2000 ft. to 6000 ft. above the sea-level, the Liberian variety thrives at from sea-level to an elevation of 1000 ft. It is not certain, however, that it cannot be cultivated at a considerably greater altitude, in which case its value will be greatly enhanced. On an estate in Ceylon, where the African plant has been tested, the enormous crop of two tons of Coffee to an acre has been yielded. The plant is being tested in several other countries beside Ceylon. In Brazil, Venezuela, South Australia, Guatemala, Queensland, Fiji, Jamaica, and other lands the seeds have been planted or young trees introduced. It is curious that hitherto England has been the principal centre of its propagation. Large numbers of saplings and many thousands of seeds have been distributed from London, where the tree has been cultivated under artificial heat. The seeds travel well if packed in damp Moss. One important feature presented by the Liberian Coffee is its power of resisting the leaf disease, which is so fatal to the planters' hopes in Ceylon; so far, at least, the plants grown in that colony have shown no signs of contracting the disease. There is little doubt that the Liberian Coffee is destined to take an important place in the list of important vegetable products, and that it will be the means of introducing a valuable industry into countries which would otherwise not have thought of entering into competition with the Coffee districts of South America and the East.—"Colonies and India."

Bitter Cucumbers.—A writer in the "Monatschrift für Pomologie" states that the occasional bitter taste of Cucumbers is entirely due to immoderately slow growth. It may readily be prevented, therefore, by judicious watering when the slowness is dependent on drought, but when cold is the origin of the mischief no means of prevention has as yet been discovered.

THE KITCHEN GARDEN.

REPORT ON SAVOYS GROWN AT CHISWICK.

The Savoy (Brassica oleracea bullata major).—A species of Cabbage, distinguished by having the leaves blistered or curled. It is the Chou de Milan of the French, but differs from the Chou de Milan of the English. A collection of all the known varieties was secured from various seedsmen. These on examination by the committee were arranged into three classes as follows:—

1. Early or Autumn Savoys.—Early Dwarf Vienna, Early Joulin, King Koffee, Little Pixie, Tom Thumb, Tours, Ulm, and Vienna.

2. Second Early or Mid-Season.—Dwarf Green Curled, Dwarf Early, Golden Savoy, Golden Globe, Golden Yellow, Green Globe, Large Green Curled, and Sugar Loaf.

3. Late or Winter.—Cape, Drumhead, Des Vertus, De Pontoise, Impériale, Limay, Norwegian, and the following

Bastard Varieties.—Chou de Milan Suisse, Feather Stemmed, and Sprouting Ulm.

The varieties named being considered distinct are here described, and correct photographs of most of them have been secured for future comparison. The variation in appearance of different stocks of the same variety was in some cases very remarkable, and where very decided these have been given as distinct. But very few of the stocks received were so pure but that more than one variety could have been selected. The classification arrived at was determined by the average appearance.

Cape (Nutting & Sons; Carter & Co.).—Plant of splendid habit, from 14 in. to 16 in. high, and from 2 ft. to 2½ ft. in diameter, with a short stem. Leaves rather small for size of plant, of a bluish-green colour, faintly tinged with brown on the outer edges, coarsely curled and leathery. Heart roundish, from 6 in. to 7 in. in diameter, very firm and solid. A late and very hardy sort, but of coarse and inferior quality.

Du Cap (Vilmorin & Co.).—A very curled variety of the preceding.

Chou de Milan Suisse (Carter & Co.).—This is properly a Borecole of strong growth, forming no heart; leaves somewhat curled like the Savoy, very hardy, and useful in severe winters.

Court Hatif (Vilmorin & Co.).—Plant dwarf, height 10 in., the heads almost resting on the ground, diameter from 22 in. to 24 in. Leaves large, spreading, rounded, of a light green colour, very curled near to the heart; hearts of medium size, flattened, from 6 in. to 8 in. in diameter; tolerably firm and solid, of a pale green colour. A very early sort of the mid-season section, but soon decays. Inferior.

Common Savoy (Carter & Co.).—See Green Globe.

Chou Tres Fries du Cap (Leroy).—See Cape.

De Pontoise (Vilmorin & Co.).—Similar to the Vertus, but much coarser and hardier.

Dwarf Ulm.—See Ulm.

Dwarf Early Drumhead.—See Court Hâtif.

Dwarf Green Curled.—Plant from 12 in. to 14 in. high, with a short stem, and a diameter of 24 in. Leaves spreading, of medium size, finely curled throughout, of a pale green colour. Hearts rounded, at times a little pointed, from 6 in. to 8 in. in diameter, solid, very finely curled, and of a beautiful light green colour. An exceedingly pretty Savoy, and stands the winter well. The best variety for general use.

Des Vertus.—Plant almost resting on the ground, from 12. in to 15 in. high, and from 2½ ft. to 3 ft. across. Leaves spreading, large, rounded, of a light glaucous green colour, coarsely curled. Heads flattened, from 10 in. to 11 in. in diameter, very firm and solid, of a light green colour, the outer edges of the leaves tinged with brown. This variety hearts early, growing frequently to a large size, and having few outer leaves, does not stand severe frost so well as the ordinary Drumhead. Fine quality.

Drumhead.—Plant almost resting on the ground, from 14 in. to 15 in. high, and from 2 ft. to 2½ ft. in diameter. Leaves large, broad spreading, coarsely and slightly curled, of a deep green colour, with faint tinges of brown on some. Hearts large, from 8 in. to 10 in. or 12 in. in diameter, not much curled, very firm and solid. A very fine Savoy for winter use; very hardy.

Drumhead (Veitch).—A very curled selection of finer quality, but not so hardy as the ordinary form.

Dwarf Drumhead.—See Drumhead.

Early Dwarf Ulm (Dippé Bros.).—See Ulm.

Early Dwarf Vienna.—See Vienna (Stuart & Mein).

Early Dwarf Vienna (Benary).—Plant of very small, close, compact growth, smaller than the Ulm, with very finely curled leaves of a very pale green colour. Hearts small, roundish ovate, from 3 in. to 4 in. in diameter, very close and firm, fleshy, crisp, and tender. Comes early into use. This is the finest and most curled variety of any.

Earliest Smallest Vienna (Benary).—See Little Pixie.

Early Joulin (Vilmorin & Co.).—Plant small, of close, compact growth; height from 9 in. to 12 in. with a short stem, and from 20 in. to 24 in. in diameter. Leaves of a very deep green colour, and very coarsely curled, giving it a very distinct appearance. Hearts small, roundish ovate, much but coarsely curled, very firm and solid, crisp and fleshy. Comes early into use. Inferior.

Early Limay.—See Limay.

Early Vienna.—See Vienna.

Feather Stemmed (Carter & Co.).—Plant partaking of the character of Brussels Sprouts, the stem being covered with half open sprouts, and having a small head, like a savoy. Leaves much curled. Worthless.

Green Curled (Nutting & Sons).—see Dwarf Green Curled.

Green Globe (Vilmorin & Co.).—Plant of low spreading growth, height 12 in., with a diameter of 24 in. Leaves roundish, rather coarsely curled, of a dark green colour. Hearts roundish or flattened, from 7 in. to 8 in. in diameter, very firm and solid. A mid-season variety. Good stock.

Golden Savoy (Vilmorin & Co.).—Plant from 20 in. to 24 in. high, and from 2 ft. to 3 ft. in diameter, somewhat spreading. The outer leaves pale green, much curled. The hearts large, rather loose, conical, about 7 in. in diameter, of a deep golden colour; very handsome and ornamental, of excellent quality.

Golden Globe (Nutting; Carter; Minier & Co.).—A dwarfer form of the preceding, forming round and more solid hearts.

Golden Yellow (Benary).—A very fine dwarf form of the preceding. Leaves finely curled. Hearts roundish ovate, about 6 in. in diameter; very firm and solid, of a beautiful golden yellow. This variety hearts early, and then opens out in mild weather, becoming very ornamental.

Imperiale (Carter & Co.).—See Des Vertus.

King Koffee (Harrison & Sons).—A very finely curled selection of the Vienna. Larger than the Early Dwarf Vienna of Benary.

Large Vertus Drumhead (Vilmorin & Co.).—See Des Vertus.

Large Green Curled (Minier & Co.).—Plant from 17 in. to 18 in. high, with a stem of about 6 in. Hearts somewhat conical in shape, about 6 in. in diameter, moderately firm and solid, and finely curled. This may be termed a tall growing variety of the Dwarf Green Curled, and inferior.

Large Late Erfurt (Benary).—See Green Globe.

Large Late Vertus Drumhead (Vilmorin & Co.).—See Des Vertus.—"Journal of the Royal Horticultural Society."

ASPARAGUS FROM SEED WITHOUT TRANSPLANTING.

As is well known, the usual way of getting up Asparagus is by sowing seed and afterwards transplanting the crowns. In all works on kitchen gardening this plan, and no other, so far as we are aware, is recommended. That the plan succeeds well enough, when managed skilfully and carried out under favourable conditions, there can be no doubt; but it is also true that transplanting throws the plants back considerably, and that it is often the cause of great losses amongst the plants, thereby causing much loss of time in filling the beds. Asparagus is one of the most troublesome subjects to transplant that the cultivator has to deal with. Seeds grow freely enough, and there is never any difficulty in raising young plants; but moving from the seed bed to the permanent bed is a very different matter, particularly when the plants have to be transported any distance—as, for example, when they come from the nursery, where they are not always so carefully lifted as they should be. Several plans have been suggested to prevent losses in transplanting, and one of the best is to move the plants just when they begin to grow, and not before, as is frequently done. Whichever plan is adopted, however, there are sure to be losses, causing blanks in the beds, and which have to be filled up the following season.

By sowing the seed where the plants are to remain, however, and simply thinning them out to the proper distances apart, all trouble and losses are avoided. Perhaps a little more seed is used at first, and a little more space occupied for the first year or two; but these considerations are nothing compared with the advantages obtained. There are other objections that might possibly be offered to the plan, but they are not worth considering. It is well known that, by transplanting, the plants that grow lose a year or more, owing to the check they receive. The first year their growth is usually as weak or weaker than it was the year previous in the seed bed, where, had they remained, it would have been increasing in strength, and the plants would have yielded a crop proportionally earlier. To sow seed to transplant when the seedlings are two years old or more, and afterwards wait for four or five years longer for a crop, is a long while, when perhaps a third of the time might be saved by sowing seed only, as has been recommended. A few years ago the writer was asked by a gentleman to go and see a plantation of Asparagus which he had made some distance from his own place, because the situation and soil were favourable—a market gardener contracting to look after the plantation, under the supervision of a friend of the gentleman's. About an acre of good ground was inclosed, great quantities of manure applied to it, including many tons of bones, and the whole was trenched over 3 ft. deep. At the proper season young plants were procured from the nursery and the beds planted. It happened to be rather a dry time, and the plants were nothing the better for their journey from the nursery, and, though as carefully and as quickly got into the ground as possible, about one-third of the crop perished during the summer. The second year the blanks were made up again from the nursery, and again a large proportion died, but not so many. It was in the autumn of the same year that we visited the beds; the gentleman was anxious to have them in good yielding condition as soon as possible, and also to have plants for forcing. We suggested that the spaces in the rows should be ready where possible, and sown with seed, and that the remainder of the ground should be laid out in beds and also sown. This was done, and the following autumn there were no blanks on the ground, and by the third year the seedling plants were about as good as those which were several years older, and that had come from the nursery. The old market gardener received our suggestions about seedling beds rather contemptuously at first, but he acknowledged in the end that the plan answered well. This, however, was not the only example of seedling plantations we had seen, for we had learned the plan in an extensive Scotch garden, where it was found to answer, and was carried out on a considerable scale. In a large quarter there, not one blank was to be found, and at the end of the third year, thanks to timely thinning and subsequent good culture, the plants were as fine and strong as we have seen transplanted ones at the end of five years or more from the time of sowing. Beds for seedling plantations may be made in the usual way, either raised or sunk according to circumstances, and afterwards dressed and cultivated in the ordinary manner.—"Field."

KITCHEN GARDENING IN GREECE.

Like all other branches of horticulture, kitchen gardening has made great progress in Greece during the last few years, and in the Athens vegetable and fruit market we meet with as large and as fine a display of salads, Artichokes, Tomatoes, Aubergines, Bamias (Hibiscus esculentus), Peas, Beans, and other green material as is to be found in the larger cities of Western Europe. The modern Athenian costermonger and his attendant donkey are as great institutions in the city of the Violet Crown as they are in London, and in the early morning our streets resound with similar cries to those that are heard in your own smoky city, but in language differing but little from that used in the days of Thucydides. Fruit and vegetables here are sold by the oke (2·82 lb. English), an old Turkish weight still used throughout Greece, at a cheap rate. I have already described the numerous wild vegetables, such as Chicory, Sowthrift, &c., which are sold in the streets, as well as the beautiful floral displays made by our flower-sellers almost throughout the year. How would some of your lovers of flowers like to have the privilege of buying a huge bouquet of Lilies, Roses, Violets, and Hyacinths in mid-December for as many pence as they would give shillings in England, or a large bunch of Violets for less than a penny on Christmas Day?

Fruit growing, too, is progressing, thousands of new subjects of every description being planted every year. Cherries, Apricots, Peaches, Pears, &c., are all good and cheap, as may be seen from the following price list of the best quality of fruit, which is chiefly grown at Kermelonea, outside Athens proper: Pears, 1½d. to 2d. per oke; Water Melons, 1d. to 1½d.; Cherries, 3½d. to 4½d.; Morello ditto, 4½d. to 5½d.; Apricots, 2d. to 3d.; Peaches, 3d. to 4d.; choice Grapes, 2d. to 3d.; Pomegranates, 1½d. to 2d. The best Pears are grown in the island of Skopelos, and fetch from 3½d. to 4½d. per oke. Greek gardeners, I am happy to say, are doing their best to profit by the privileges which they enjoy in this beautiful home of the sun.

X. Landerer.

Athens.

Potatoes on Waste Heaps.—Two years ago I cleaned out a pond in which the small stream flowing through it had left a large quantity of alluvial deposit. This was shot into a meadow close at hand, and formed a heap about 14 rods in area. This I planted in spring with Irish Rock Potatoes, 3 ft. apart every way. The crop which we raised last week quite realised my expectations, eight bags (160 lb.) of prime tubers coming to the scale. It is worthy of remark that they were almost entirely free from disease, while Potatoes in the kitchen garden adjacent were much affected by it. Might not many of the waste heaps which we constantly see about the country be thus advantageously utilised?—W. J. Foster, *Dene Court, omersetshire.*

Sharpe's Invincible Pea.—In my trial of new Peas this season I find this to be an excellent and distinct Pea. I have grown it side by side with Marvel, Dr. McLean, Criterion, and others, all excellent Peas, and I consider it to be second to none of them. It is a second crop Pea; sown April 12, it came into flower on June 20, and was gathered July 1. The pods, which are in pairs, each contain from nine to eleven Peas of a beautiful green colour. It is very productive and excellent in flavour. Its height is from 2½ ft. to 3 ft.—David Lumsden, *Bloxham Hall.*

Mushroom Beds.—The best season for making up these is now at hand, and when a good supply of fresh stable manure is at command it should be carefully shaken over, and any dry portions thoroughly moistened, adding a good quantity of fresh turfy loam as the work progresses. The loam will moderate the heat and make the bed last longer than it otherwise would do, as the violent heating to which the manure is sometimes exposed drives off the elements most essential for the growth of the Mushrooms, and hastens the decay of the manure, thus necessarily shortening the season of production. Beds made up firmly of this mixture seldom heat too strongly, and they may be spawned almost immediately. As soon as the spawn begins to run a good coating of new loamy soil, of a rather adhesive texture, should be sifted fine and applied as a covering, beating it down as firmly as the back of a spade can make it. Beds made in this manner in situations where a moist intermediate temperature can be commanded have continued to supply abundance of Mushrooms for a long period.—J. G.

Jefferies' Little Queen Lettuce.—I can fully endorse all Dr. Roden says (p. 148) respecting this Lettuce. I have grown it this year for the first time, and I must say that it is superior to any other Lettuce for summer work. I gave it a fair trial along with a very superior strain of Paris Cos, which I have had for several years, and which I thought could not be surpassed until I compared it with Little Queen. The two sorts were sown on three occasions under precisely similar conditions; their after treatment was also similar, and the result in each case was that the Little Queen was superior to the Paris Cos. At first I thought it slow in growth, but when I pulled one up, its firmness, weight, crispness, and good flavour convinced me that Paris Cos was eclipsed, although larger and much more showy looking. If all new introductions were to be tested by some standard sort, as in this case, much disappointment would be avoided.—J. Gadd, *Thorndon.*

Crowbar-planted Cabbages.—I have not the number of Th Garden to which Mr. Gilbert (Vol. XIII., p. 407) refers, but I do not remember having condemned the crowbar system of planting either Cabbage or any other of the Brassica family. I remember, however, having questioned the advisability of extending the practice to early Potatoes and similar crops. I have for years planted Broccoli and winter greens on Mr. Gilbert's system.—J. Groom.

Cucumbers and their Use in the East.—One of the most favourite vegetables in the East of Europe is the common Cucumber (Cucumis sativa), or Angouria, as it is called in Greece and Turkey. It is sometimes eaten as salad with oil and vinegar, but more often with salt alone, and, with bread, often forms the evening meal of the Greek or Turkish labourer, with a few Tomatoes or a bunch of Grapes as the second course. Cucumbers also play an important part at the tables of the rich, and are often eaten at dessert with fruit. In the month of April, when they are scarce, they cost in the market from 2d. to 3d., but late in June and July the Athens costermonger does a thriving trade in them at a halfpenny apiece for the largest and best. The peel is much used as a cure for headache, and is bound on the forehead with a handkerchief. There is also a peculiar superstition that if a piece of the peel of the first Cucumber eaten is bound round the head the person will be free from fever during the whole of the year. The ancient Greeks called the Cucumber Sikya, but the moderns use the Turkish word Angouria. The Cucumber must be eaten when it is young and fresh, otherwise it is apt to be unwholesome, and the ancient Greeks had a proverb to the effect that Cucumbers produce illness, except eaten with strong wine, but this saying, like many others, is not borne out by fact.—X. Landerer, *Athens.*

PROPAGATING.

Mikania scandens variegata.—This beautiful climber may be readily increased by means of cuttings either made of the tops, as shown in fig. 1, or single eyes, as seen in fig. 2. The soil usually used for soft-wooded plants will suit the Mikania admirably. Insert the cuttings, sprinkle them over with a fine-rosed watering pot, and place them in the cutting box on bottom-heat, when they will emit roots in a fortnight. They must be shaded from sunlight, as they very soon flag, and if too much moisture be given overhead, it is liable to affect injuriously the tender parts of the foliage. The best plan is to tilt the glasses or lights after watering for a couple of hours, an operation which should always be done early in the morning. H. H.

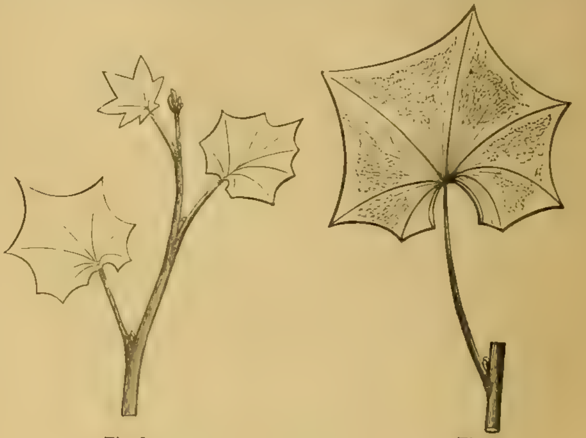


Fig. 1. Fig. 2.

Cuttings of Mikania scandens variegata.

LAW.

Injury to Vegetation Caused by Chemical Works.—The plaintiffs in the case of Brooke *v.* Wigg, recently before Vice-Chancellor Sir James Bacon, in the Chancery division of the High Court of Justice, Sir Richard Brooke and his eldest son, are owners of Norton Priory estate in Cheshire, and the Cuerdley estate in Lancashire, the former consisting of about 5600 acres, and the latter of 1200 acres, and the object of the suit was to restrain the defendants, who were owners of a manufactory which had originally been erected for the manufacture of creosote and pitch, but was now used as alkali works, from damaging the estates and crops thereon. The plaintiffs complained that in addition to the manufacture of alkali, the defendants had carried on vitriol, copper, soda, and other works, and that the effect of the fumes from such works was deadly to the vegetation, and generally destructive to the plaintiffs' property. It was also said that the defendants could have prevented this result by the use of proper means of condensation. The principal defence of the defendants was that besides their own works there were numerous other works for the manufacture of alkali and similar substances, which had been in operation for more than twenty years without any complaint or interruption on the plaintiffs' part, and that much of the damage was caused by these other works. They contended that they had used the best processes known for condensing the vapours, under the inspection of the Government. They admitted that deleterious vapours had escaped from their works in rare and accidental circumstances, but they denied that such damage was continuous. The trial occupied a great many days and a great quantity of evidence was given on the plaintiffs' part to prove that on account of the proximity of the defendants' works to the Norton Priory estate the greater part of the damage caused to that estate was due to the defendants' works, as they were within a mile of the estate, while the other works at Widnes and Runcorn were at a much greater distance. Vice-Chancellor Bacon said that every man was entitled to the free and uninterrupted enjoyment of his own property, and any interference with such enjoyment was a wrong for which the law gave a remedy. In the special circumstances of this case it was necessary for the plaintiffs to bring home acts of damage to the special defendants whom they had selected for their attack. The evidence on both sides had been very voluminous, and much time had been necessarily expended in cross-examination; and in his opinion the result of the evidence was to establish the deleterious nature of the vapours complained of, and to bring home a considerable part of the damage done to the plaintiffs' property to the defendants' works. The defendants had proved by their evidence that large quantities of similar vapours had come from other works, similar to those of the defendants, at Widnes, and for a period previous to the erection of the defendants' works, and they had brought witnesses who said that the damage done by the defendants' works could not be distinguished from that done by the numerous surrounding works of the district. Against the theories and opinions of such witnesses he had to set the positive statements of the witnesses of the plaintiffs, who had with their own eyes seen the vapours from the defendants' works settle on the property of the plaintiffs. If they had also suffered from other manufactories, that was no reason why they should suffer more from the defendants' works. Therefore, he held that the plaintiffs were entitled to an injunction to restrain the defendants from conducting their manufacture to the injury of the plaintiffs; but, as it would not be possible to distinguish the damage done to the plaintiffs by the defendants' works from that done by other works, he should make no order for an inquiry as to damage.

ANSWERS TO CORRESPONDENTS.

The First White Fuchsia.—In The Garden of July 27 (p. 98) I saw an enquiry about various Fuchsias, one of which was Venus Victrix. Mr. Cripps, of Tunbridge Wells, has kindly given me the date of its purchase by him. Venus Victrix was the very first white Fuchsia ever brought out and the parent of all the others. It was raised by John Gulliver, gardener to the Rev. W. Smith Marriott, of Horsmonden, Kent, and was bought from him by Mr. Cripps in 1841.—W. Marriott, *Down House, Blandford.*

The Crape Myrtle.—The enclosed has been given to me as the flower of the Crape Myrtle. It came from New Orleans. Can you tell me what the real name of the plant is?—Kate Ryley, *Southport.* [The red-flowered greenhouse shrub which you have sent is Lagerstrœmia indica, a native of the East Indies.]

Prince Albert Pine.—This, I believe, was raised in the same batch of seedlings as Black Prince by Mr. Foden, then gardener to Mr. Entwistle, The Foxholes, Lancashire. My informant is a son of Mr. Foden, who resides in this neighbourhood.—H. Lindsey, *Huntroyde.*

Epilobium obcordatum.—This is one of the most difficult plants I have to propagate from cuttings. Can any one give me a hint in order to ensure success?—W. [Cuttings taken from ripened wood of E. obcordatum root freely if put in during the months of April and May. They keep well if potted after rooting in small pots, and can be planted out in the spring of the following year. Plants of it have stood well during mild winters on the northern slopes of the rockery in the Royal Botanic Garden, Edinburgh, where they flower abundantly. Those planted in level beds also flower well, but are more liable to suffer from damp during winter than on the rockery.—J. M'Nab.]

Pyrus japonica.—Is the fruit of this eatable? A cluster of it is growing on a small plant in my garden.—J. K, *Glenoir, near Galway.* [The fruit of Pyrus japonica is certainly not poisonous, but very much depends upon the taste of the person attempting to eat it as to whether it is eatable or not. Its flavour when ripe is not absolutely disagreeable, but, for my part, I never cared for more than one bite. The Japanese, I believe, make it into a preserve.—T. S.]

Eradicating Buttercups.—I want to know by what means I can get rid of a very strong plantation of Buttercups which has been increasing yearly in a field in my pleasure ground, driving out all the best Grasses.—J. E. Gray. [Sulphuric acid is a sure cure for Buttercups. Women or boys should carry it in old blacking bottles, to the necks of which should be fastened a piece of strong wire, long enough to hold them by; have a stick 12 in. long by 1 in. in diameter, with a long, sharp point, dip the stick into the liquid and then place its point on the crown of the plant; the effect is instantaneous. I have seen this plan practised successfully in one of the best kept gardens in this county.—John Garland, *Killerton, Exeter.*]

Garrya elliptica and other Hardy Shrubs.—What is the best season for pruning and taking cuttings from the Garrya elliptica, and also the best season for transplanting it? I would ask the same question respecting Arbutus and Holly, and whether the variegated and hedgehog Holly are less manageable as to transplanting than the common Holly?—J. E. Gray. [Garryas should receive what pruning they require in spring after they have flowered. Spring is also the best time to prune both the Arbutus and Hollies. Cuttings of the Garrya and Holly may be put in now; in some localities they will strike root in a shady border in the open air, but in others they require a frame. It is useless putting in cuttings of Arbutus. These shrubs may be all safely transplanted at the present time. I am not aware that any of the Hollies are more difficult than others to move, but if the Garrya has been more than one year established, as a rule, its removal should not be attempted. Better get it in a pot from some nursery.—T. S.]

Early Peaches.—If I were going to plant a house with Peaches I should employ few, if any, but the old varieties. I am not at all sure that of those mentioned (p. 210) any but Early Beatrice are earlier than the old early kinds, and even Beatrice with me this year was not gathered before the Early York, which is a larger and better fruit. It is said, nay, claimed for new varieties, that they are improvements on old sorts, not so much in the character of the fruit as in the constitution of the tree, which is stated not to be so subject to mildew, &c.; but those that have come under my observation are subject to all the ills of the old sorts. As to being earlier, to-day I have gathered some excellent fruit of Grosse Mignonne, Barrington, Early Savoy, Acton Scot, Bellegarde, Dr. Hogg, Early Alfred, and Early Louise, and I gathered fruit from the same varieties last week, with the exception of Bellegarde. I should have added Crawford's Early, which is worthless, except for show. Indoors some time since I gathered Early York, Early Beatrice, Early Alfred, and Royal George all at the same time, Royal George being by far the best. Plant plenty of the well-known sorts is my recommendation, and afterwards the new kinds might be added if thought proper.—John Taylor, *Hardwicke Grange, Shrewsbury.*

Lilium auratum.—What number of blossoms does this Lily usually bear? I have one now in flower, 6 ft. 6 in. in height, which is bearing thirty-two blooms on a single stem, all of good size. On another plant the blooms were very large, but they remained cup-like, and the petals would not reflex; can any of your readers explain this? I feed my plants liberally with Standen's manure, and plant the bulbs on the top of the soil, like Hyacinths, in order to give more root room.—F. H. E. [It is difficult to reply definitely to the question asked, viz., How many blossoms does this Lily usually bear? Much depends on the mode of culture and the variety—for there are many—some never exceeding from twelve to fourteen blossoms, and others a much larger number. I presume the enquiry relates to the blooms on a single stem. I have had forty and upwards, and on fasciculated stems, a mode of growth not uncommon in the case of this Lily, sixty, seventy, and eighty; a clump, originally one bulb, of five stems, two large and three smaller, produced upwards of 300 blooms last year. I cannot say what may be the cause of the petals of the Lily described not fully opening. It is possible that it may have received a check from spring frosts, which, although not remarked at the time, is now developing its effects.—J. W. S.]

Names of Plants.—*R. L. D.*—Clethra alnifolia, from North America. *Miss T., Belfast.*—Maurandia Barclayana. *F.*—Odontoglossum Andersonianum. *Inquirer.*—Hedychium Gardnerianum. *Anon.*—As far as can be judged it is a kind of Asclepias. The shrub is Neillia thyrsiflora from Nepaul.

Names of Fruits.—*J. M.*—117, Beurre Diel; 19, common Bergamot (standard); 92, the true Marie Louise. *Bradford.*—Alberge or Portugal Peach and Magnum Bonum Plum.

Earwigs.—"S. G. S." (p. 230) seems to doubt the fact that earwigs creep into people's ears, but I can assure him that they occasionally do so. When a lad one crept into my ear, and I have known the same thing to happen in the case of others. A slice of Apple pressed against the ear is said to induce them to come out.—B., *Highgate.*

Scottish Horticultural Association.—At a recent meeting o this Society Mr. A. McKinnon, Melville Castle, read a paper on the culture of the Peach. He described its early history and introduction into this country, and referred to the many difficulties that attended the growing of Peaches in Scotland. He concluded by stating that after taking into account all the facts of Peach culture it was necessary to have a heated glass house in order to ensure a crop each season. A spirited discussion followed the reading of the paper, some of the members contending that artificial heat was not needed in ordinary seasons to produce a crop, each side citing instances of failure and success with and without the application of artificial heat. Mr. John Davidson, of Messrs. Dicksons & Co., next read a paper on the culture of fruit trees generally pursued in nurseries. He described the system of budding and grafting, mentioning the different stocks required for different trees, and the adaptability of certain stocks for various soils, and urged the more general planting of fruit trees for profit. Mr. R. Munro made a few remarks on autumn-flowering Chrysanthemums, and exhibited twelve sorts at present bearing a profusion of bloom. Miss Hope, Wardie Lodge, sent some beautiful flowers of Dianthus atropurpureus, raised from the Chiswick strain of seed. Messrs. Downie & Laird exhibited two fine new Phloxes, named Lady Belhaven and Mrs. Bowyer; and Mr. W. Black exhibited a curious Lobelia with blue and white flowers on the same plant. Mr. A. McIntosh, Paxton House, received a certificate for an excellent new round Potato named Premier White.

International Show of 1880.—There need be no fear that this will be a great success provided the matter be fairly ventilated, and to do this effectually I would suggest to those who have the matter at present in hand the advisability of at once communicating with some leading horticulturist in all the large towns in the provinces, preparatory to forming a small working local committee in each place for the purpose of getting subscriptions and guarantees. I feel satisfied that if such steps were at once taken, they would be much more effectual for the furtherance of the cause than any circulars that could be sent from a central committee; I have little faith in such appeals, and can speak from experience. For example, we all know that much more should be done, and can be done if we have willing workers, for that valuable charity, "The Gardeners' Benevolent Institution." A short time ago, a few gentlemen formed themselves into a committee here with the ostensible purpose of furthering the objects of this institution by individual efforts. A fair amount of success has been achieved, which could never have been done by appeals through circulars; hence, I think that if something of the same plan were adopted to collect funds for the "International," it would be widely and liberally responded to. A further suggestion crops up in my mind, viz., that if the show is not, strictly speaking, international, it will assuredly be national, and why should not a representative chosen from these local committees be selected and placed upon the general committee? By this means we give a fair representation of national horticulture.—Robert Tait, 43, *Corporation Street, Manchester.*

OPENING OF KEW GARDENS.

It is to be regretted that some of our great national institutions are national more in name than in reality, and that they are not sufficiently open to the public, for whose benefit they were in a great measure founded. This injudicious conservatism may be partly due to the majority of the community being indifferent to the matter, and to the small minority, interested in the pursuit of science, or in the study of Nature, not being strong enough to secure those privileges to which they may justly lay claim. But it is also due to the selfish and monopolising spirit of those local authorities to whom the Government has given much power, and whose opinions carry great weight in any deliberations the Government may enter upon with respect to the management and uses of the institutions over which those authorities have so much control. Kew Gardens have long held a high position among those public places that are devoted to the pleasure or instruction of the public. In a sanitary point of view alone they are, as a place of recreation and amusement, a great boon to everyone within reach of them. They were formed at an enormous cost, and are supported with a revenue of over £22,000 a year; while, as a large field for the study of horticulture, botany, and vegetable physiology, they are second to none in the world. And yet those magnificent and useful gardens are closed to the public throughout the best part of the day, and for seven or eight hours after the time all other botanic gardens are open to the public. In the early morning of summer, in the early hours of a spring or autumnal day—periods equally favourable for study or recreation—these gardens are absolutely closed. Such an arrangement must appear to most people both unaccountable and indefensible, and certainly the arguments adduced in support of that arrangement are so flippant and sophistical, that it is surprising that the present management of the gardens has not been challenged more often than it has been. First, we are told that the earlier opening of the gardens would interfere with the pursuit of science. This would be, if true, a serious allegation, considering that one of the chief purposes of the gardens is to develop and encourage a taste for botany and the sciences allied to it. But the fact is, neither would the free opening of the gardens interfere with the pursuit of science, nor is there, unfortunately, much science going on to be interfered with. If the opponents of any change in the present arrangements mean such scientific work as is done in books or reports, it is done in the officers' rooms, in the library, or in the herbarium, with none of which the public wish to interfere; and with regard to such horticultural work as sending plants to the colonies, that is done in the propagating houses or packing sheds, which are always private. Even were the gardens more used, as they ought to be, for educational purposes, and the botanical classes held which are supposed to be held, the free and unrestricted admission of the public could not in the least interfere with either public teaching or private study. The gardens are large enough, as everyone knows, and there are plenty of places in them where lectures could be given, where the student could study, and scientific researches be conducted, without any hindrance from public interruption. It has even been alleged that the public would interfere with the gardeners doing their proper work! When the authorities have to resort to such an absurd argument as this, they only show the weakness of their case. It is also urged that the people have more time allowed them in Kew Gardens than at any other gardens in the world; and that the general public do not desire to be admitted earlier than the present time. Neither of those allegations can be substantiated. Besides, even were this statement correct, it does not follow that, because other countries adopt a faulty plan, we should do the same. Nor are they correct in saying that the public are indifferent on the subject. There are few of us who do not hear people constantly complaining that gardens, so far away from London, are not open till one o'clock, when the best part of the day for either recreation or instruction has gone, and the hot summer afternoons, or the short hours of a spring or autumnal day are alone left to them. With regard to another argument that has been urged, viz., that the proposed change would entail extra police and expenditure, it may be doubted whether much more expense would be incurred, provided the large funds at present at the disposal of the managers were economically administered. But while the considerations that have been advanced in support of the present arrangement at Kew Gardens are such as cannot be for a moment entertained, the arguments in favour of the unrestricted opening of these gardens are, as might be gathered from the foregoing remarks, such as no unprejudiced person will attempt to disprove. It is evident that if the gardens, for the maintenance of which the public have to pay annually a large sum of money, were open in the forenoon, the advantages which the public derive from them, both from a sanitary and an educational point of view, would be far greater than they are now. On account of the short time now allowed either for study or recreation, the gardens are, except during public holidays, almost deserted. But were a different arrangement adopted, hundreds would take the place of the few visitors that are now to be daily seen there. It is, however, from a moral and educational standpoint that we would insist upon every facility being given for visiting these gardens, and every encouragement being held out to students to take advantage of the fine opportunity offered them for the study of botany and horticulture. What Mr. Ruskin has so well said of "art intellect" may be also said of science intellect. "A certain quantity of art intellect," says that eloquent writer, "is born annually in every nation. . . . . . You may lose it, or you may gather it; you may let it lie loose in the ravine and buried in the sands, or you may make kings' thrones of it, and overlay temple gates with it, as you choose." In the same manner we may say that a certain quantity of science intellect and nature-loving intellect is born to us every year. We may lose much of this also, or we may gather it. We may let it lie buried in obscurity or blighted by indifference and neglect. Or we may let it expand the intellect, improve the taste, and even mould the character of thousands. We may make out of it discoveries that never would have been made, and diffuse widely a taste for the beautiful that never would have been diffused, but for the fostering influence of popular education, and the help and encouragement of all who are interested in the moral and intellectual advancement of the community. By all means, therefore, let these gardens be opened the greater part of the day, and let classes be held and lectures delivered, and every other means taken to attract the visitor, whether in search of health or of knowledge. Then, out of the thousands that will be annually flocking to them, there will be less chance of science intellect and nature-loving intellect running to waste, and more chance of adding largely to the many eminent botanists we have amongst us.—"Medical Press."

Monstera deliciosa in the Conservatory.—When the old stove space of the conservatory in the Botanic Gardens, Regent's Park, was thrown into the cool and larger part, some large plants of this that grew on rockwork were subjected to a much lower temperature. They seem, however, to thrive fairly well, thus proving that this remarkable and graceful plant is available for winter garden embellishment in the cooler class of structures of this kind.

Cineraria maritima.—This, though an old inhabitant of our gardens, is not so often seen as it ought to be. The whole plant is of the purest silvery white, with the exception of the upper surfaces of the leaves, which are greenish, although in a degree covered with wool, and perhaps in the whole vegetable kingdom no leaf is more beautifully cut. This ought to be pre-eminently a park plant, and where freely used would give life and character to ornamental grounds. It is of a shrubby habit and may be freely used in the outsides of choice masses of shrubs; those, too, who edge their masses of shrubs with some particular plant will find this a very striking plant, as it may be kept to any height that may be required, and a mass of this plant edged with some dark green dwarf shrub would be a sight, and, if properly attended to, would equal, if not excel, any of the Centaureas. It is a fine plant for toning down masses of blue or purple; and, mingled with the Perilla, crimson Beet, or the dark Coleus, it would be effective; a few plants might also be introduced with advantage into the conservatory. In short, from its peculiar whiteness, it is attractive in any place, and is a most charming window plant.—Thos. Williams, *Ormskirk.*

Adiantum Farleyense from Seed.—This, the most distinct and beautiful of all the Maiden-hair Ferns, and one which has hitherto either not seeded at all, as some assert, or, if it has, has not reproduced itself true from seed, has recently come to me as a chance self-sown seedling in the gravel underside shelf of my stove house, a fact which may be interesting to some of your readers who grow stove Ferns.—W. E. G.

Lemon Seeds Germinating Inside the Fruit.—A few days ago on cutting open a Lemon that seemed to be sound, I found that many of the seeds were more or less in a growing condition inside the fruit, the roots being in some cases ½ in. long, and the cotyledons expanded. This I considered more singular than Melon seeds germinating inside the fruit, as few seeds start sooner into growth than those of the Melon where the necessary heat and moisture are applied.—J. G.

Clubbing in Cabbages.—This, according to a Russian Government enquiry, is not the work of an insect, but that of a parasitic vegetable called Plasmidiophora Brassicæ. Some of the means adopted by way of remedy are sowing the ground, before planting the crop, with common salt, wood ashes, or, before all, soot.

No. 357.] SATURDAY, SEPTEMBER 21, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

AUTUMNAL ROSES AT WALTHAM CROSS.

ALTHOUGH there have long been what are termed autumnal Roses or Hybrid Perpetuals, which produce a second crop of flowers in autumn, yet it is seldom at this time of year that one can meet with a really good display of blossom. The flowers always open in succession, not simultaneously, and it is not often that a really good stand of Roses can be shown in September, unless the collection to choose from be an extensive one; and doubtless it is for this reason that prizes are so seldom offered for Roses at flower shows in the autumn. It was not without some surprise, therefore, that we found at Messrs. Wm. Paul & Son's the other day a really fine display of Roses. Most of those, producing a good bloom, are dwarf, or pillar Roses, and their disposition is different from that usually found in most nurseries. Although it is necessary to have square quarters and long lines in many instances, yet some parts of the ground, besides being devoted to ordinary nursery purposes, are also converted into a really ornamental garden; large pillars of Roses are introduced among low-growing shrubs or stately Conifers; Tea Roses on their own roots are grouped together in round beds on the edges of shrubberies; whilst the outside walls of glass houses are concealed beneath free blooming Teas which have now a gay appearance. The best kind just now is Belle Lyonnaise. The plants of it in this case are not formally trained, as too often happens in nurseries; on the contrary, they are allowed to grow almost at will, and in that way they are much more effective and enjoyable than in any other.

Madame Berarde, planted on a large bank near the entrance to the nursery, forms a striking feature; it is "worked" on De la Grifferaie, which is used here as a stock; it is pegged down every year, and, thus treated, it yields an abundance of flowering shoots. As an autumnal Rose this is one of the best in its way. Its flowers somewhat resemble those of Gloire de Dijon, but they are richer in colour and different in shape. Here, indeed, it is thought to be superior even to Gloire de Dijon.

Duchess of Bedford is a fine new Rose which blooms well in autumn. It was shown this year for the first time by Mr. W. Paul at several of the London and other shows, where it was much admired. It somewhat resembles Charles Lefebvre in habit of growth and shape of blossom, but in colour the flowers are deeper and brighter than those of General Jacqueminot.

Countess of Rosebery is another new Rose now finely in flower. It resembles Etienne Levet, but is much freer in growth and blooms more profusely. Its blossoms are of a bright rosy-salmon and handsome in shape. This, when well established, will make a fine Rose for autumnal blooming.

Dwarf Roses on the seedling Brier (Rosa canina) do remarkably well at Waltham Cross, and on that account this stock is now as largely used as the Manetti. Large breadths of all the best autumn blooming Roses are almost as attractive now as one would expect to find them in July. Among the best we may name La France, one of the finest Hybrid Perpetual Roses in cultivation. Rows of it now represent quite hedges of blossom. La Rosière is producing abundance of dark velvety maroon flowers almost fit for an exhibition stand; and Mons. E. Y. Teas, a well tried Rose only in cultivation a few years, is also of great value both for summer or autumn flowering. Gonsoli Gaelano is a pretty variety which flowers freely in autumn; it is dwarf and admirably adapted for grouping in beds or raised banks; its flowers are of a lively salmon-blush, and large in size. Bessie Johnson, Imperatrice Eugenie, and Eliza Boelle, all excellent white Roses, are now finely in flower, and Avocat Duvivier affords an abundance of brilliant scarlet flowers all through the season. Among other kinds now in good bloom may be named Star of Waltham, Countess of Oxford, Eugenie Verdier, and Charles Lefebvre. Captain Christy is one of the best and freest blooming of autumn Roses, and Mons. Fillion, of the Jules Margottin type, makes an excellent pillar Rose. Madame Sophia Fropot is a strong grower, and bears abundance of clear pink flowers. Jules Margottin and Triomphe de l'Exposition bloom well as pillar plants; and La Duchesse de Morny, Alfred Colomb, and Sir Joseph Paxton rank amongst the best of perpetual blooming garden Roses. Acidalie, a fine old white Rose of the Bourbon section, is now profusely in bloom; indeed, in good soil it flowers without intermission all through the summer and autumn. Round beds filled with dwarf plants of Souvenir de la Malmaison on its own roots in the central avenue are very attractive, every shoot being surmounted by numbers of buds and fine blossoms. Large beds of plants of the beautiful Tea Rose Sofrano turned out of small pots into rich soil fifteen months ago have made remarkable growth, many of them being 3 ft. high, bushy, and well furnished with buds and cream-coloured blossoms. Hundreds of seedlings are to be found here in all stages of growth, from a strong flowering specimen down to small plants a few inches high, which have been raised from seed saved with much care from hybridised flowers in the hope of still gaining something new to add to the already lengthy list of good Roses grown here. A quantity of Hybrid Perpetual Tea and other Roses struck from cuttings last autumn are now furnishing a fine display of bloom. The cuttings were inserted in a raised border on the north side of a hedge, and nearly 60 per cent. of them struck root freely. They were afterwards transplanted at distances varying from 1 ft. to 1½ ft. apart in the same border, into which had been dug a large quantity of road sand. The plants are now bushy and strong, and full of bloom and buds, and where flower beds are required to be kept gay from July to October, plants raised in this way will be found to be acquisitions.

The stock De la Grifferaie, already referred to, is a variety of Rosa multiflora, sent out by a French Rose grower many years ago. Its flowers are rosy-purple, changing to pinkish-purple as they advance in age, and they are produced in very large clusters. It is, in fact, in itself a good climbing Rose, both as regards foliage and flowers, but its great value at the present time is its proved suitability as a stock for some kinds of Roses. Among others the strong-growing varieties of the Tea scented, especially the Gloire de Dijon race, grow on it with surprising vigour, and produce very fine flowers quite up to the end of autumn. Madame Berarde, Maréchal Niel, climbing Devoniensis, and Gloire de Dijon here growing on the seedling Dog Rose, have only made shoots from 4 ft. to 5 ft. this year, while the same varieties on the De la Grifferaie have made shoots from 8 ft. to 10 ft. The shoots of the latter, too, are stout in proportion to their growth and well ripened, being provided with laterals now producing an abundance of well-formed flower buds. This stock is found to strike readily from cuttings, and buds take most freely on it. For standards it is probably not so well suited, inasmuch as it is rather tender, and therefore, if allowed to grow to a great height above ground, it would be liable to be injured by frost. Whilst kept beneath the surface, however, it makes an excellent stock for climbing Roses.

Dog Rose cuttings are also struck here and used for stocks. They are put in during autumn, and consist of young shoots torn from the old wood with a "heel." The following summer, like the Manetti, they are budded near the ground, and for some kinds of Roses they are found to be superior to any other kind of stock, and they are much more easily procured than seedling plants.

Pot Roses, of which there are thousands now to be seen in this nursery, are exceptionally strong and healthy; they are plunged in raised beds of Cocoa-nut fibre and manure in a sunny position. Thus situated they grow vigorously and ripen their wood thoroughly. C. S.

Early and Late Budded Roses.—In budding Roses, one of he principal points in order to ensure successful results is to bud arly, so that the buds will push shoots sufficiently early in the season r the wood to get matured enough to withstand the winter, or so late hat the buds, after uniting, will remain dormant until the following pring. I prefer the early system, as in light soils if drought sets in the bark does not rise so freely, and success is not so certain as while the sap is abundant. It is also a saving of time to get a moderate growth matured in the same season in which the buds are put in.—J. G.

TREES AND SHRUBS.

TREES AND SHRUBS FOR AVENUE AND LANDSCAPE PLANTING.

The season for making alterations in pleasure grounds and park lands being at hand, a few practical notes on planting and selecting the different varieties of trees for that purpose may, perhaps, be of service to intending planters. Of course, in a single paper it is impossible to do full justice to the subject in all its bearings. I shall therefore, for the present, confine my remarks to the varieties of trees and shrubs which I have found to produce the best results. One of the first principles to be observed is winter effect. Woodland aspects in summer will, to a certain extent, take care of themselves; but winter—cold, bleak, and dreary—requires all the warmth that can be imported into it, by which I mean plenty of evergreens, variegated and berried plants, coloured bark and gracefully-branched deciduous trees. With this principle in view, therefore, the following trees and shrubs will be found best adapted for the varied purposes named:—

To begin with evergreens, for home avenues no Conifer can exceed in beauty Thujopsis borealis. It is a plant of free growth, perfect in symmetry, graceful in habit, excellent in colour, thoroughly hardy, and very cheap. Yet how rarely do we meet with it! Another plant, almost equally good, though of different habit of growth, is Thuja Lobbi, which, being more conical in habit, might suit some tastes better than the Thujopsis. As to Wellingtonias, which are now so much in vogue for avenue planting, graceful as they are in a young state, I think them anything but well adapted for small avenue planting, but for large parks or extensive avenue planting, at great distances apart, no plant can be better suited, though personally I should prefer Picea nobilis, or the Douglas Fir. The latter has proved itself such a free grower in our climate, and its timber being also very valuable, those on the outlook for avenue trees would do well to plant it. Picea nobilis is of slower growth and less graceful, but is superior to the Douglas Fir in point of colour.

As a deciduous avenue tree I would recommend the Spanish Chestnut; first, for its gracefulness in winter, and, secondly, for its flowers in spring, its grand foliage in summer, and its fruit in autumn. Next in order come the Lime, Horse Chestnut, and Elm. In giving a list of trees that produce the best landscape effects, it must be borne in mind that the grouping system is the one which I prefer, *i.e.*, from three to seven or more trees of one kind, according to the distance from the mansion, the formation of the ground, &c., should be placed together. Of course, single specimen trees play an important part in all landscapes, but the groups should, in all cases, be formed first, and the finishing stroke, as it were, be given by planting a columnar-habited tree there, a pyramidal one yonder, a drooping one in another spot, and so on, to complete the picture. The copper-coloured Beech must be first on our list, next the green form or type, then the Birch and the Oak, some of the Turkey varieties of which have foliage equal to that of the best sub-tropical plants. As evergreen companion groups the best are the common Spruce Fir, the Douglas Fir, the Scotch Fir, and Evergreen Oaks. As single specimens for associating with this grouping, the best are the Robinias, Lombardy and Aspen Poplars, Silver Birch, Green Hollies, Deodar and Cedars of Lebanon, Cryptomerias, and Wellingtonias. For scenery nearer home, and for general "gardenesque" effect, the following are the most striking plants, viz., green and variegated Hollies, common and variegated Yews, Junipers, and Retinosporas, and, indeed, all the compact and dwarfer-growing Coniferæ. As deciduous companion trees I would select the Laburnums, Ailantus, Japanese Maples, and Robinias, all of which will be found to blend harmoniously and look best when grouped, as to colours, &c., as above suggested.

So many handsome, compact, and dwarf-growing hardy shrubs have of late years been introduced from Japan and other countries, that the idea has more than once occurred to me that an entire garden of dwarf, columnar, conical, and pyramidal-growing shrubs (no artificial distortion or clipping to be attempted), arranged with a view to permanent effect, would be interesting. Who, therefore, will establish such a garden? I would be only too glad to do the practical part connected with it. W. W. H.

FOREST WORK FOR SEPTEMBER.

As the time is fast approaching when planting operations will demand attention, all works necessary for the preparation of the ground should be pushed forward as rapidly as possible. These consist of fencing, draining, trenching and holing. One of the first requisites to successful planting is a fence impervious to sheep and cattle; and unless rabbits and hares can also be kept out, but little can be done in rearing plantations formed of small trees. Where the land has not been trenched the advantages of early holing are great, as the excavated soil becomes ameliorated by exposure. Much of the nursery stock intended for woodlands may now be raised and afterwards carefully bedded upon a dry, warm soil until it can be placed in its permanent situation. If this operation be well performed, and a proper soil and position be chosen, the growth of the small rootlets will continue and the plants may afterwards be removed under circumstances most favourable to their rapid development. Injured roots should be carefully pruned back at once, but the less the knife is used, either upon these or upon the head, the better. The layering of a deciduous coppice should be finished as early as possible. Select two years' shoots, peg them firmly in the ground, cutting the layer half-way through on its under side, if necessary, to bring it well to the ground; cover with from 4 in. to 6 in. of soil, and bring the head into an upright position; also cut away from the parent stool layers of two or three years' growth. Layering may be practised upon almost every kind of hard wood, as, for instance, on the Elm, Ash, Oak, Sweet Chestnut, Alder, Poplar, Birch, Plane, Lime, Willow, Mountain Ash, and Hazel. For filling up thin and neglected coppices, it is at once the cheapest and by far the most expeditious way. The transplanting of evergreens should be finished as quickly as possible. Where large deciduous trees have been previously prepared by trenching round them, now is the time for their removal. Take up the roots as entire as possible, preserve the bark uninjured, and avoid cutting or pollarding the top. Secure a firm bed on which the tree may rest, but avoid treading the soil around its roots when in a wet state. By dashing on water with some force during the filling in, and heaping up sufficient soil to allow for a gradual subsidence, more good may be done than by treading, and thus encasing the delicate rootlets in an impenetrable mass of hard clay or other soil. In looking through the plantations all trees requiring support should at once be staked and tied, and, where early transplanting has been done, watering may now be necessary. Mulching should not be neglected, as any substance which prevents evaporation will prove beneficial to the trees. Trim all wood rides preparatory to the shooting season, and remove the trimmings at once. If any timber remain in the woods it should be speedily removed before wet weather sets in. Select stock for filling up the home nursery, and also such as is required to supplement the home supply in filling up the woodlands. Finish the trimming of all hedges, and see that those adjoining pastures are kept in good repair. Wherever the pruning of forest trees has been neglected they should now be attended to without delay; but this should have been finished much earlier in the season. A. J. Burrows.

Pruning Conifers.—I noticed the other day a fine plant of Pinus Pinsapo, the lower branches of which had a few years ago become rather straggling and bare, and which were therefore pruned back in order to get them to make fresh growth. This plan has resulted satisfactorily, for the branches at the bottom are now as dense as at the top, and equally green and healthy. No one need therefore fear to prune Pinus Pinsapo should such an operation become necessary.—S.

Jasminum nudiflorum aureo-variegatum.—This is one of the best golden-foliaged wall climbers at this season of the year that we possess. It is a vigorous-growing plant, and one which ought to be cultivated by every one who values a contrast of colour on open walls, and it is as hardy as the type.—J. G.

The Broad-leaved Spindle Tree (Euonymus latifolius) is very brilliant in copses in the Alps now. With the curious Fuchsia-like effect of the fruit, it deserves to be more popular. In some of the gardens the Snowberry bushes of America bear their fruit in thick-set racemes in such abundance, that the shoots are all bent and the half-standard bushes white with them.

NOTES OF THE WEEK.

Salvia splendens Out-of-doors.—We have lately noticed handsome pyramidal bushes of this in South German gardens, the plants reaching a height of nearly 6 ft. We remember seeing this plant flowered in the same way at Bicton by the late Mr. Barnes, but the bushes were not so tall. The plant has a singularly brilliant effect in the autumnal garden.

Sweet-scented Cyclamens.—Those thinking of planting gardens of sweet-scented flowers would do well to include the autumn-flowering Cyclamen, which is now in abundant bloom on the hills in Switzerland and North Italy. The fragrance is delicious, and yet of a refined and delicate character. When gathered in bunches with a few leaves around, as Violets are gathered, its fragrance is more apparent than in the case of single blooms.

Single Dahlias.—Mr. Cannell, Swanley, showed at South Kensington, last Tuesday, a Dahlia with a single row of broad, velvety, maroon, purple-shaded petals and a large tuft of bright yellow anthers in the centre; the whole somewhat larger than a crown piece. It was called Paragon, but it looks very much like an original species. It quite took the committee by surprise, who collectively pronounced it to be one of the most beautiful plants brought out for some time, either for borders or for cutting. There was a yellow one with it, almost similar in all respects, except in colour.—T. B.

Desmodium racemosum in September.—As grown among the herbaceous plants in the Botanic Garden at Berne, this is a peculiarly beautiful plant. The shoots are tied to a stake for about 4 ft., but grow free for several ft. more, and droop in the most graceful manner laden with numerous pretty purple flowers. As it comes at a season when plants that bloom freshly and well are not plentiful, it is all the more welcome.

Adiantum Hendersoni.—This new Fern may now be seen in the Pine-apple Nursery. It has gracefully-arched fronds, resembling those of Pteris serrulata. The pinnæ are of a bright bronze colour, and the young fronds are especially pretty. For growing in pots or vases it will be found very useful, being a distinct and free-growing variety.

Gentiana asclepiadea in Autumn.—This tall and graceful Gentian is now a beautiful object in many Alpine woods and copses. Sometimes, where it is plentiful, one may see it dotted through the long Grass and coarse herbs of a little glade in the wood; sometimes leaning out from small bushes, singly or in small groups, in all cases the Willow-like shoot bearing its handsome spike of flowers. The height of the plant makes it quite at home in long Grass and such herbage as occurs in woods and copses or unmown spots. Therefore it will prove one of the very best of all wild garden plants. It has long been a favourite with lovers of good border flowers. Our gardens contain many places where it can be grown as we suggest. It and the Grass of Parnassus, and the autumn-flowering Cyclamen are among the few flowers now in bloom on the Alps that remind one of the beauty of the flora there before scythe, and herds, and time have done their work.

Dianthuses as Bedding Plants.—While much labour is bestowed in obtaining Pelargoniums, Verbenas, and similar plants for flower garden embellishment in summer, comparatively little attention is paid to the beautiful Dianthus Heddewigi, which can be made to form a fine display from early in June to the beginning of September. At Chiswick there has been all through the summer a grand display of these Dianthuses, the result of seed sown early in May. Their blooms are large, and possess a brilliancy and variety of colour afforded by few other plants. Rich, deep soil and plenty of water constitute the chief conditions of success. They seed with tolerable freedom, and when once a good strain is secured it can easily be kept and improved by yearly weeding out indifferent flowers.

Orchard Trees Everywhere.—It is very instructive to notice the effect of the orchard trees dotted over the landscape in various parts of Switzerland. It is noticeable that as trees they are often as effective in the landscape as any of our so-called ornamental trees. They are scattered over the land without the slightest attempt at inclosure or fencing of any kind, and the country is covered with them in many parts. Where the climate is not unfavourable they attain such stately dimensions, that one accustomed only to our pruned trees would not suppose these to be fruit trees at all. It must be charming to see the land when these trees are in flower in spring. In America and England we count our acres of orchard. Here the orchard is everywhere dotted over the Grassy slopes and pastures. These seem none the worse for it. It is most unfortunate that with us so few people plant a fruit tree without a wall or hedge (both expensive and useless objects in this case) around it. And not only this, but even the old-fashioned habit of planting an orchard of any kind has gone out of fashion in many places. The orchard at Preston Hall is the only good one we have seen for years in a private place. All this should be changed if we are to do justice to either the land or the people in it. We ought to have good orchards, and we ought to plant fruit trees as we now plant Privet and Laurel.

Phlox Mrs. Hunter.—This is one of the best of the light-coloured class of herbaceous Phloxes. Its flowers, which are borne in large pyramidal trusses, are pure white with a clear pink eye, and are quite as large as a half-crown piece. We lately saw it in fine condition in the Tottenham Nurseries.

Michaelmas Daisies on Walls.—The Asters may be added to the many plants that will grow on walls; there are handsome colonies of them now on some by no means old or mouldering walls in Berne. The seed, no doubt, fell from some plants in the garden above.

New Varieties of Lilium speciosum.—In the Tottenham Nurseries may now be seen several new varieties of Lilium speciosum roseum and album, all great improvements on the types. Their flowers are very large and the petals broad, and in form more like those of L. auratum than the speciosum section, from which they originated.

Datisca cannabina in Autumn.—The female or seed-bearing form of this plant is a very fine thing with me now, the herbaceous stems of the year having a growth of nearly 10 ft., and bending gracefully towards the ground owing to the weight of the fruit. It is a fine subject for the wild garden, or for a place on the turf near a shrubbery—H.

Odontoglossum grande.—Now, when Orchid houses are almost flowerless, this Odontoglossum, familiar to every one, is doubly valuable. It is very effective just now in Mr. Williams' nursery, Holloway, where there may be seen fine varieties of it. Of these some of the flowers measure upwards of 6 in. in diameter, and they are richly barred and spotted with yellow and chocolate.

Two Good Nerines.—The best scarlet-flowered Nerine now to to be found blooming in the London nurseries is N. Fothergilli major. Its flower-spikes are very strong and its trusses of blossom large, as are also the individual flowers, which are of a waxy substance and brilliant scarlet. N. Planti, a deep rose-flowered variety, is another equally good kind. We lately saw both sorts finely in bloom in Messrs. Henderson's nursery, Pine-apple Place.

Tillandsia Lindeni vera.—This is now in flower in Mr. Williams' nursery, Holloway. In habit it is dwarfer than T. Lindeni, and its flower-spathe is broader and shorter. Its flowers, which are of a rich satiny blue, open in succession for many weeks together.

Griffinia hyacinthina and Blumenavia.—Both these Amaryllids may now be found in bloom in the Victoria Nurseries, Upper Holloway, where, associated with Ferns and ornamental-leaved plants, they are very effective. They are easily grown, much more so, indeed, than many of the Amaryllis, and might be cultivated more largely in private gardens than they are at present. The plants in question are well supplied with healthy foliage—rather a rare occurrence in the case of Griffinias at the time of flowering.

Cryptogamic Society of Scotland.—The fourth annual conference of this Society will be held in the Royal Botanic Garden, Edinburgh, on Oct. 9, 10, and 11 next, to which all interested in cryptogamic botany are invited.

Destructive Gales in Ireland.—We were visited by severe gales of wind on Sunday and Monday last, which have done a great deal of damage to kitchen, fruit, and flower gardens in this district. Dahlias, which at the time were at their best, perhaps suffered the worst, being literally broken to pieces and rendered useless for the remainder of this season. In the kitchen garden all the Brassica family, with the exception of Cabbages, were blown about and lying in every direction, although none, so far as I have seen, are actually uprooted. Jerusalem Artichokes, which have made good growth this year, are laid low, and most of their leaves are as black as if they had been struck down by frost. In the fruit garden standard Apples and Pears are nearly stripped of their fruit, which is, of course, rendered useless as regards keeping. Forest trees here and there are uprooted, and many of them have lost large limbs. Shrubs, where much exposed, have also suffered severely.—S. Kevan, *Castle Upton, Templepatrick, Antrim.*

Grapes Shown at Edinburgh.—At the Royal Caledonian Horticultural Soicety's show, held the other day in the Waverley Market, Grapes were shown in great quantities. Probably only on the occasion of the international show in Edinburgh, four years ago, has such a fine collection been brought together. For baskets of Grapes alone some 3 cwt. were sent in, and in one case as much as 30 lb. had been cut from one rod. Mr. Johnstone, Glamis Castle carried off the first prize in this class.

NOTES FROM KEW.

Hardy Shrubs.—One of the Witch-hazel family, Hamamelis virginica, a North American shrub, is now in flower; the colour of the blossoms, which are freely produced, is yellow, and the corolla is composed of four long petals; the foliage is much like that of the common Hazel. Although long known to cultivation, this interesting shrub is not so often met with as it deserves to be. Cassia marilandica has elegant pinnate leaves; its stems (about 4 ft. high) are crowded with axillary racemes of yellow flowers, the reddish-brown stamens giving them, at a short distance, a variegated appearance. Eugenia Ugni, a Chilian member of the Myrtle family, is well worth a sunny place on a wall, where it is sure—at any rate in the South—to produce in abundance its small but agreeably-flavoured and perfumed fruits; the white flowers are also fragrant, as are the leaves when bruised. Ceanothus azureus is a very useful late summer or autumn-flowering shrub; the genuine plant, with dark blue blossoms, is to be had in more than one London nursery, although a much inferior one, with lavender-coloured blossoms, generally does duty for it. Desmodium pendulifolium is a charming plant of graceful habit, and belongs to the Pea family; the stalked leaves, composed of three leaflets, are green above and very glaucous beneath; the drooping or arching branches bear a profusion of showy, reddish-purple flowers in long-stalked racemes. Lespedeza bicolor, from 4 ft. to 6 ft. high, and a near relation of the last-named, is of totally different habit, being erect and having upright racemes of flowers somewhat less in size than those of D. pendulifolium and rather lighter in colour. Bupleurum fruticosum is a remarkable plant in many ways; *e.g.*, it is an excellent example of a shrubby umbellifer, an enormous majority of the plants belonging to this family being of herbaceous habit; and, again, its leaves, of a sea-green colour, are entire, and not compound, as in most umbellifers. This shrub is a native of the south of Europe, and is worth a sheltered place, as the strange appearance afforded by its numberless umbels and peculiarly tinted leaves is different from that of any other outdoor shrub. The Chaste tree (Vitex Agnus-castus) ought to occupy a place in the gardens of the curious; the long-stalked leaves, made up of three leaflets, are of a very light green tint, and the plant is sufficiently striking even without the flowers, which are rather inconspicuous; the leaves, when dry, have a powerfully aromatic odour. Aralia japonica, with its noble, compound leaves of immense size, and its proportionately large inflorescence, made up of very numerous panicles of small, whitish flowers, furnishes a sub-tropical aspect hardly equalled by any other hardy shrub.

Hardy Herbaceous Plants.—Potentilla ambigua, a creeping sort from the Himalayas, has small leaves with three-lobed leaflets, and long-stalked, solitary, bright yellow blossoms; this is a distinct and handsome little plant. Cimicifuga japonica grows about 2 ft. high and has showy panicles of white flowers, the white stamens of each flower being so numerous as to form a dense, bush-like mass. Some of the more remarkable and rarer of the Michaelmas Daisies, which are so important as autumn-flowering herbaceous plants, are those hereafter mentioned. Aster Herweyi, a new kind from North America, is very distinct; it grows about 3 ft. high and flowers very freely, the colour of its blossoms being lavender. A. sikkimensis, an equally distinct sort from the Himalayas, has pale blue blossoms, and grows about 2 ft. high. A. grandiflorus attains a height of 3 ft. and is a handsome blue, the very leafy character of its involucral bracts giving it quite an appearance of its own, and rendering it different from any other Aster which we call to mind at the present moment. A. turbinellus, 3 ft. high, is a beautiful plant with graceful and airy habit and handsome blue flowers. A. ptarmicoides, a rare sort, grows about 18 in. or 24 in. high, and bears most abundantly rather small flower-heads of a white colour. A. longifolius ramosus is a densely-branched and free-flowering plant growing about 2 ft. high and bearing pale purple flowers. A. mutabilis, 4 ft. or 5 ft. in height, is one of the best of the white kinds, the individual flower-heads being a good size. The Golden-rods form an important feature at the present time in all general collections of herbaceous plants; although all are yellow-flowered, many exhibit extreme differences in size, habit, and general appearance. We have selected the best from the large selection at Kew. Solidago odora, about 3 ft. high, is a light and extremely graceful plant. S. nemoralis is a most floriferous sort about 2 ft. high. S. rigida, 3 ft. in height, has large, broad leaves and bright yellow blossoms. S. sempervirens, with large, strap-shaped leaves, grows about 3 ft. or 4 ft. high, its foliage and erect pyramidal panicles giving a totally different aspect from most of its relations. S. altissima, a tall-growing sort 6 ft. high, is a free-flowering and handsome plant which would make a striking single specimen plant on a lawn, &c.

Greenhouse Plants.—Trichinium Manglesi is a very ornamental Swan River Amaranth, which, we believe, was first introduced to English gardens by Mr. Thompson, of Ipswich; the pale purple flowers are borne in a dense, rather woolly spike. Brunsvigia Josephinæ is an extraordinary bulbous plant from the Cape of Good Hope; the bulb is very large, and the leaves are not developed at the same time as the flowers; the stout scape supports a very large umbel of dull, dark red flowers. Mesembryanthemum pallidum, a shrubby sort with small leaves, flowers freely and produces an abundance of handsome purple blossoms.—†.

THE SPECIES OF EUCOMIS.

These Cape bulbous plants, though not very showy, present a peculiar aspect not generally met with in other kinds of the Lily family, the broad, handsome foliage, more or less spotted at the base with purple, from which rise the tall cylindrical spikes of blossoms, surmounted by a crown-like tuft of leaves, renders them very attractive objects, and well deserving of general cultivation, either for the greenhouse or the outdoor garden, as they have proved of sufficient hardiness to survive our ordinary winters on light and dry soils, as in the case of many other Cape plants. There are but four species, all of which are in cultivation, and all were introduced previous to the present century.

Wavy-leaved Eucomis (E. undulata).—This kind has leaves 18 in. long, from 2 in. to 4 in. broad, and pointed, rather concave and wavy at the margins. They are profusely marked with dark purple blotches on the under surface, which, in the variety striata, assumes the form of stripes. The flower-spikes are 2 ft. to 4 ft. high, spotted below. On the upper half are densely arranged in a cylindrical manner the very numerous blossoms about ¾ in. across, greenish-white with purplish centre, and the spike is crowned by a tuft of narrow green leaves.

Spotted Eucomis (E. punctata).—This, the largest growing kind, has leaves 1½ ft. to 3 ft. long by 2 ft. to 4 ft. wide, nearly flat, and pointed. It differs from the last in the margins of the leaf not being wavy, less spotted, taller spikes, and the more lax arrangement of the blossoms. There is also a striated form of this kind.

Tongue-leaved Eucomis (E. regia).—This is rather dwarfer than either of the preceding; leaves 12 in. to 18 in. long by 4 in. to 6 in. wide, rather blunt at the tip, crisped at the edges, and slightly spotted on the outer base. The raceme of flowers is very dense, about 1 ft. high, with no intervening naked portion between it and the leaves. The tuft of leaves at the top is larger than in the other kinds. It is also known under the names of E. microphylla and E. clavata.

Dwarf Eucomis (E. nana).—This, the smallest kind, much resembles the last in habit, but the leaves are not so large and not crisped at the margins, and the flowers are greener and the crown of leaves not so large. As in E. regia, the leaves are spreading and lie horizontally, whilst in the others they are more erect.

W.

A Good White Pelargonium.—I observe Joan of Arc strongly recommended in The Garden (p. 235). I do not grow that variety, but am much pleased with White Vesuvius, by far the finest white Pelargonium I have yet met with. It is a capital white, with all the good qualities of Vesuvius, from which it is a sport. I hope to grow it largely for pot culture, and also as a bedding plant. I quite agree with all that is said of the value of white Pelargoniums for bouquet making and other purposes. A good pure double white is still a desideratum, though Madame Amelia Baltet goes a very long way to meet it.—D. T. Fish.

Sericographis Ghiesbreghti.—This is one of the most serviceable of winter-flowering plants. It is easily grown and it flowers freely in a small state. It has good foliage, and light, feathery, scarlet flowers that last long in good condition in plant stands. Cuttings of it put in in April or May strike freely, and make excellent plants for the ensuing winter. The young plants will succeed in a mixture of peat, loam, and sand. Plunge them in a gentle bottom heat in a cold frame during the summer, keeping it tolerably close and moist while they are making their growth. Being of erect habit, they should be stopped early in order to induce the formation of side shoots in proportion to the sized specimens required, but when growth has been nearly completed, plenty of air should be admitted, and they should be kept quite cool from this date forward. They should be introduced in succession into gentle heat, and they will flower all through the dull months.—J. Groom.

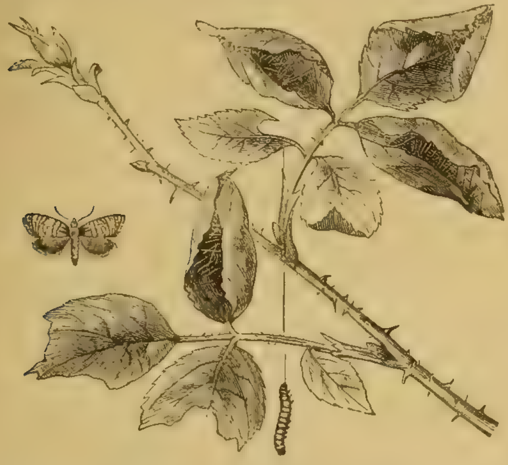
GARDEN DESTROYERS.

BERGMANN'S TORTRIX.

(CRŒSIA BERGMANNIANA.)

This pretty little moth is one of the Rose grower's greatest enemies. Unfortunately, it is very common and widely distributed. Its caterpillars feed on the buds and leaves of Roses, and in this way are most destructive, spoiling the flowers and destroying the foliage. They curl up or fasten together the leaves, and live within the so-formed shelter. They may best be destroyed by carefully going over the Roses, and pinching all the leaves which are curled up sufficiently hard to crush the caterpillar inside. This requires doing with a certain amount of care, as they are very active, and may drop out if you pinch the wrong part of the leaf. When the Roses are pruned, the shoots which are cut off should be burned, as there may be eggs on them. The moths can be caught in a common butterfly net after sunset, when they may be found flying round the Rose bushes. The perfect insect measures about 6·10ths of an inch across the wings when they are fully extended; the upper pair are yellowish, finely reticulated, with reddish-brown lines, and with three transverse, silvery bands; the lower wings are dark grey, with their margins almost black. The caterpillars have fourteen joints, including the head, and eight pairs of legs, one pair being placed on each of the first three joints of the body, and on the sixth, seventh, eighth, ninth, and last joints. The head, the first three pairs of legs, and a shield-shaped spot at the back of the first segment of the body are black; otherwise the caterpillars are of a transparent greenish-yellow, with a few fine hairs of the same colour on each joint. They grow very fast, and change their skins several times; when full grown, they are about ½ in., or perhaps rather more, in length. The chrysalis is dark brown, and the edge of each segment of its body is furnished with two transverse rows of fine spines. The female moth lays her eggs singly at the base of Rose shoots. In very hot weather the caterpillars are sometimes hatched in about a month, and the second brood of the moth appears in September, but generally the eggs are not hatched until the following spring, towards the end of April. The caterpillars attain their full size and assume the chrysalis state about the end of May, in the meantime living on the leaves and buds, which they much injure. They have the power of emitting from their mouths a glutinous secretion, which, when drawn out, forms a silken thread; apparently whilst drying these threads contract, for, as soon as the caterpillar has placed a few across a leaf from one side to the other, the leaf begins to curl up, and at last assumes the curled and rolled forms so common on Rose bushes. Sometimes they will fasten two or more leaves together in the same manner; in these leafy shelters caterpillars live, letting themselves down by threads. If disturbed when full grown they line the interior of their habitations with silk, and in a few days become chrysalides. At the end of about a month the chrysalides, with the help of the rows of spines before alluded to, work their way to the end of the rolls, and the perfect insect makes its appearance, having forced its way through the chrysalis case which splits open at the head. This moth belongs to the family Tortricidæ, a family of small moths, the caterpillars of which are very destructive to various trees and plants, particularly to fruit and forest trees and Roses, by eating their leaves and fruit. They may generally be distinguished from other moths by their upper wings being wide, with the upper and lower margins almost parallel, and the side margin being nearly straight. The upper margin is much curved near the base of the wing, forming quite a shoulder; the upper wings are more or less marked with transverse bands, and the lower ones are usually grey, somewhat darker at the outer margin. Lozotænia rosana, or the Rose Tortrix, is another member of this family, which gives much annoyance to the Rose grower. It is considerably larger than Bergmann's Tortrix, measuring eight-tenths of an inch across the wings, but it varies very much in size. The upper wings are of a greyish-brown, marked with dark brown somewhat transverse lines, some of which are much shorter than the others. The lower wings are of a pale ochreous-yellow, with the margin nearest the body blackish. The economy of this insect is much the same as that of Bergmann's Tortrix.

S. G. S.

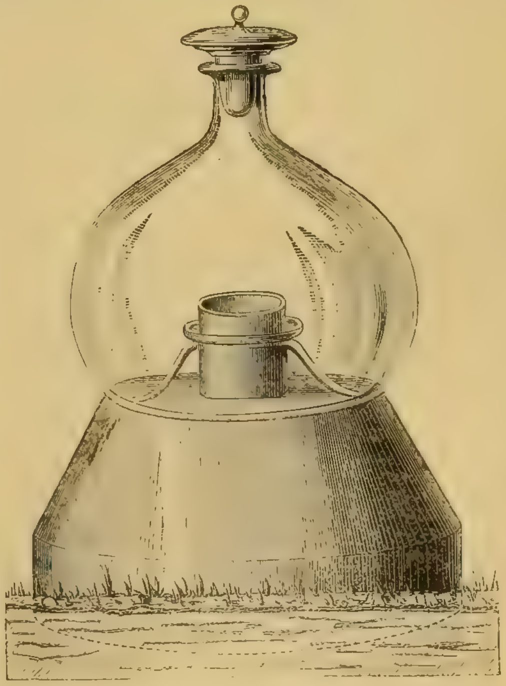


Bergmann's Tortrix (Crœsia Bergmanniana).

Rose Tortrix (Lozotænia rosana).

A TRAP FOR WASPS, ANTS, AND OTHER INSECTS.

The ingenious inventor who discovers a trap that will effectually put an end to the ravages of ants, wasps, and similar garden pests will earn the gratitude of all fruit and flower growers. Numberless devices already exist which are warranted by their inventors to accomplish this purpose, but although they seem to succeed well enough at one time, they are comparatively useless at another. The contrivance figured above



Trap for the destruction of Wasps, Ants, and other Insects.

is stated by M. E. A. Carrière in one of the last numbers of the "Revue Horticole" to fulfil its purpose most admirably. Its construction is founded on a knowledge of the habits of the wasp. There are two varieties of the common wasp (Vespa vulgaris), one of which, Vespa parietum, is larger than the ordinary kind. It attaches itself more especially to buildings, and takes up its habitation in the nooks and crannies of brick or stone walls, whence its specific name. The common variety, which is familiar to everybody, affects the soil; and as it is incapable of hollowing out a nest for itself, it generally takes up its dwelling in an abandoned molehill, or one from whence it has possibly driven out the late proprietor. Here they build their well-known paper comb and send forth their fertilised females to found fresh colonies. It is, therefore, necessary to attack the enemy before this emigration takes place; we must not, however, commence operations before the colony is complete, which generally happens just about the period when the Grape begins to ripen. The trap, as will be seen from the figure, consists of two parts, the upper being made of glass, the lower of tin or zinc; inside the glass globe is a hollow provided with a rim which contains the bait. The method of using this trap is most simple. We need only place it over a wasp's nest or anthill so as to cover the opening. In the case of wasps, the bait holder must be filled with benzoline, the vapour of which will suffocate the insects. Ants, on the other hand, must be attracted with some toothsome bait, such as sugar, or honey and water, stale beer, beer and water, &c. The trap may be purchased of the inventor and maker, M. Pelletin, 20, Rue de la Banque, Paris, but an ordinary bell-glass, from the interior of which an egg-cup or other small vessel is suspended by means of a piece of string and some cobbler's or grafting wax, and a tin vessel of the form shown in the cut, easily made by any tinman, ought to serve the purpose of a more expensive apparatus.

C. W. Quin.

THE FRUIT GARDEN.

GATHERING APPLES AND PEARS.

In keeping these sound for the longest period much depends on the care with which they are gathered, and also on each kind being gathered at the right moment. Every one is capable of gathering carefully, but a certain amount of practical experience is indispensable as regards the second requisite. Imagine Williams' Bon Chrétien Pear and a Winter Nelis gathered at the same time! yet such I have known to have been done. It is well known that Apples or Pears gathered before growth is complete shrivel and dry up prematurely, or, if this does not happen, they are "sticky," and never so thoroughly mature as to be usable. More Pears are made bad than are bad naturally through this one cause of premature harvesting; therefore I would recommend grumblers about "sticky" Pears to this season leave them longer on the trees. Unfortunately, no one rule is applicable to every case as to when an Apple or Pear is fit to gather, as soil, position, exposure, and shelter have much to do with the season of fitness to gather. But, as a sort of guide to the inexperienced who may be in uncertainty, I would say, if the fruit be very gently moved upwards and part readily, without the slightest pull, from the tree, then it may safely be gathered. Another good test is to cut open a fruit, and if the seeds or pips be quite brown or black, then the crop is fit to gather. Another test, in the case of the earlier ripening kinds more particularly, is when birds or wasps begin to attack them; these depredators are too good judges to make mistakes. Apple gathering in some parts is looked upon as a very ordinary operation, capable of being performed by anybody and anyhow, a plan which might answer if the fruits are to be ground into cyder or used forthwith, but if they are to be kept in sound condition for any length of time, too much care cannot be bestowed on gathering them, as the slightest bruise induces decay; and the same remark is applicable to Pears, with the addition that, if possible, even more care should be taken with them. The manner of storing in fruit rooms is also of importance. If space can be spared, the fruit should be put in single layers only, and certainly in no case should it be two layers deep. The room ought previously to have been well cleansed and dried, and for the first two or three weeks after the fruit is gathered all the air possible should be given, as when first housed a moisture is given off by the fruit, which, if not driven out by free ventilation, lays the foundation for decay. Specky, bird-pecked, or wasp-eaten fruit should not be put in the same room with that which is sound. If it cannot be used at once, better throw it away than allow the fungus which it engenders to spread to the fruit which is good.

W. W. H.

PINES FRUITING PREMATURELY.

It often happens where Pines are grown in quantity that some of them fruit when they are little more than suckers, and before they have been put into their fruiting pots. In some places I have seen the whole stock nearly lost in this way. A general impression prevails that when Pines fruit prematurely they are of no further use. This spring, however, many of our last autumn suckers fruited immediately they were placed in their fruiting pots. To have thrown them away would have reduced our stock too much, and to have allowed the fruit to have ripened would have caused a blank next spring. By way of experiment, therefore, the fruit was removed without disturbing the plants. Soon afterwards two and three suckers pushed from the base of each fruiting stem, and after these had grown, until it was seen which was likely to be the best, all were removed but that one, and any one seeing these plants now would never know that they had borne fruit or had been dealt with in the manner just described, as they are as fine as they possibly could have been had no mishap occurred to them. The varieties were chiefly Queens, with a few smooth-leaved Cayennes and Jamaicas amongst them. Although the smooth-leaved Cayennes do not produce suckers freely, as a rule when the fruit was cut off they threw up suckers as freely as the Queens; therefore, in that case, their fruiting prematurely has been a gain to us. Some consider the cause of Pines fruiting prematurely to be neglect, and it may be so in some cases, but not in all. Ours fruited from want of both top and bottom-heat, as the structures in which we grow them can scarcely be said to be heated at all. In summer they do very well, but in winter they are half starved compared with the conditions under which Pines are generally grown. Being kept so cool and quiet in winter, they bolt into fruit immediately warm weather sets in in spring. We have never any difficulty, therefore, in getting our Pines to fruit, and when any of our fruiting plants have large suckers on them in spring they produce fruit also. We have lately had Queens bearing four fruit at the same time, and all ripening together. The centre fruit weighed about 2½ lb. or 3 lb., and the three others on the suckers over 1 lb. each; therefore, there was not less than 6 lb. of fruit on the plant altogether, and the four were a great deal more useful than one fruit 6 lb. in weight would have been. Unless for exhibition purposes, large Pines are not desirable. In many places the dessert is not placed on the table, unless on special occasions, and then the Pine is cut up on the sideboard. It, therefore, matters not in that case whether the fruit is large or small. Small fruits 2 lb. and 3 lb. in weight are, on that account, much more useful, as a rule, than those double that weight, and small fruit can be more profitably produced. We have had a good many plants this season each of which has produced two fruits, and that is the way in which we now intend fruiting a good many of our Pines, *i.e.*, taking two and three fruit from each plant. Some affirm that suckers weaken the parent plants, but I do not think that they do so, as some of our plants, furnished with vigorous suckers, are bearing as large and finely-swelled fruit at the present time as those on which there are no suckers. Small Pine suckers take a long time to become large plants; they make far more progress when left undisturbed. Our smooth-leaved Cayenne plants have produced suckers freely this season, on some of the plants there being four and even five. This we attribute to watering them well at the axils of the leaves.

Cambrian.

Coe's Late Red Plum.—I find this to be a useful variety when very late Plums for culinary purposes are required, and when grown and ripened on a wall it is even good for dessert. If netted and kept secure from the attacks of insects it will hang very late on the trees. While speaking of late Plums I may remark that, although rather a thin crop in this locality, their hardier relations the Bullaces are particularly abundant and fine.—J. Groom.

PROTECTING EARLY VINERY BORDERS.

An admission has been made on this subject by Mr. Smith, of Waterdale, which calls for some comment. Your readers may recollect that in the discussion which has only lately taken place in The Garden and elsewhere between myself and others on the subject of covering Vine borders with fermenting materials, allusion was several times made to Mr. Smith's practice, which was cited as an example of the successful production of early Grapes without the aid of fermenting materials, the reader being left to infer that the roots of Mr. Smith's Vines were principally under the said fermenting materials and outside—Mr. Hinds, of Otterspool, who has visited Waterdale, having perhaps done more than any one else to convey this impression. Now, as I have before stated, I only recommended fermenting materials to warm the outside roots of the Vines to a reasonable extent where the roots were all outside, and I stated so plainly, over and over again, not wishing to be misunderstood. The early Vineries at Waterdale were cited against me by my opponents, whom Mr. Smith has himself written to support. But now we get at the facts; observe Mr. Smith's statement in last week's Garden. He says, speaking of his early Vineries, "but all our early Vineries have the better half of their borders inside, which is, in my opinion, the most suitable place in the case of Vines that are forced early, the greater part of the roots being comfortably inside, where they can receive a regular supply of weak manure water at a temperature of 80°, and by the time the leaves begin to unfold the roots inside are ready for action, while those in the outside border remain quiet till the fruit arrives at the stoning period, and move just at the time when they are wanted to finish off the crop." Now here, in one sentence, the whole of the facts come out, and at one blow Mr. Smith destroys the evidence which he and his friends have before furnished in regard to his practice. First, Mr. Smith does not depend upon fermenting materials at all; the most of his Vine roots are "comfortably inside," where they are made still more comfortable by the "regular" application of water some 15° or 20° above the mean temperature of the inside border; and, secondly, Mr. Smith does not expect or wish the outside roots to come into action, but to "remain quiet" till they begin to move naturally about the beginning of summer, when the fruit is beginning to ripen. Comment is needless.

Wortley. J. Simpson.

TOP-DRESSING VINE BORDERS IN AUTUMN.

In many instances Vine borders are top-dressed in spring just when the young roots are beginning to push, and I am of opinion that more harm than good is often done by top-dressing at that time. Scraping the points off the young roots must give the Vines a check, and that at a very critical time. For a good many years we have been in the habit of top-dressing all our borders before the Vines have shed their leaves, and I am convinced that this is better than top-dressing when the Vines are just starting into growth. Early Vines are top-dressed sooner than this, but late ones may be done any time during September. All manure which may have been lying on the borders during the summer should be cleared off and the surface soil carefully removed down to the top roots. A layer of good substantial material should then be put on; loam and cow manure in about equal proportions, with a quantity of charred refuse in a rough state mixed amongst it, make a good compost for a surface dressing. After it has been applied, it may be trodden down firmly on the roots while it is dry, as in that condition the roots strike into it more freely than when it is loose. When this is done in autumn many of the roots enter the new soil before the Vines lose their leaves, and the advantages of this in spring are apparent, as the new roots in a healthy state are revelling amongst the fresh material and ready to assist the Vines in their growth from the very commencement. I have been told that Mr. Fowler, of Castle Kennedy, is in the habit of top-dressing his Vine borders in autumn, and if so, the advantages of this system have there been amply confirmed. I am of opinion that in many cases too much manure is employed on the surface of Vine borders. All who have used much of it will have observed that roots push into it freely, but what becomes of them? The manure cannot be left to form part of the permanent border; consequently it is annually cleared away, and fresh material substituted, and most of the roots in it are cut off and removed also; therefore a host of fresh roots have to be made. The removal of these roots must be injurious to the Vine, and I am satisfied that to put a surface-dressing of good substantial material on when it is required would be better. A mixture, such as that which I have recommended, applied now does the Vines lasting good, and two or three good waterings with liquid manure when they are growing and swelling their fruit will give them as much nourishment as they would get from a surface-dressing of decayed manure. If the border be not thoroughly drained, or the least inclined to be retentive, nothing does it more harm than loading the surface with manure. It is then impossible for the soil underneath to dry, and, not being exposed to the air, it soon becomes cold, damp, and sour. This is just the kind of border in which Grapes will shank and fail to finish properly. With an open surface this could never occur, because the soil is naturally dried from the top, and then it can be seen when to give water, which is seldom the case when the surface is hidden under manure. Cambrian.

RASPBERRIES ON LIGHT SOILS.

The Raspberry is difficult to manage on light soils, especially where the climate is very changeable; under such circumstances the Raspberry requires a deep moist soil, a shady situation, and plenty of water during the growing season, *i.e.*, while the young fruit-bearing canes are being formed. Where the ground is gravelly or light, it may be improved by removing a portion of the natural soil and adding fresh compost, such as decomposed vegetable matter, mixed with the refuse collected from the potting bench, or other similar material. On our light sandy soil here, the dry weather of the past summer brought growth to a standstill; the fruit was plentiful enough and of good quality but small, and the young canes were so weakly that anxiety was felt for the next year's crop. A crop of Cabbages planted between the rows was removed early last month, the old canes were cut away, and the young ones reduced to from three to four to each stool. The surface of the soil was then loosely forked over and a heavy mulching of horse manure, from the stable yard, was spread over it, and in addition to all this the ground has been thoroughly soaked two or three times since with liquid manure. The result is, the canes are growing apace and thickening, and by the end of the season they will be good for this locality. Too much importance cannot be attached to the position allotted to Raspberries where the soil and climate are naturally unfavourable. I have never seen such Raspberry canes as I once saw in the north of Scotland in a deep light soil in a low-lying district naturally shaded by trees from the fierce rays of the sun. Conditions such as these do not, however, exist in every garden, but they may to some extent be imitated. A cool position, surface mulching, and copious supplies of liquid manure will go far towards counteracting unfavourable conditions both of soil and climate. W. Hinds.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Warner's King and Devonshire Queen Apples.—One of the finest Apples in the orchards here this season is Warner's King. From a fine young tree re-grafted in 1875, I have just gathered upwards of 160 fruit, eighteen of the finest of which weigh 15 lb. 3 oz. It is first-rate as a culinary Apple and for market purposes. The tree is a strong grower and a good bearer; that just alluded to is ten or twelve years old. Devonshire Queen Apple is also a useful kind. Being large and having a deep red skin, it makes a handsome dessert Apple for this month and October.—J. Garland, *Killerton, Exeter.*

Gathering Early Pears.—Although it is not advisable to gather late-keeping Pears a day sooner than the inclemency of the season compels us to shelter them, it is quite different in the case of early kinds, such as Williams' Bon Chretien, Citron des Carmes, &c. These are much improved by being gathered a week or a fortnight before they are required for use and ripened in the fruit room. This early gathering is also a means of lengthening the season of such kinds as are but a very short period fit for dessert if left to ripen on the trees.—J. Groom.

The Argenteuil Figs.—I should be glad to know if any of your readers have tried any of the three following sorts of Figs, and with what results, viz., Dauphine de Argenteuil, Violette Dauphine, very like the first, and also from Argenteuil, perhaps the same, and Noir Dauphine. I saw these three at the fortnightly horticultural show at the Paris Exhibition a few weeks ago, and was very much struck with them. They were shown in great quantities, as many as 200 or 300 on a dish; also on the trees and on branches cut and brought to the Exhibition literally smothered with fruit, which was also unusually large, three to the pound perhaps. They surpassed anything I ever saw at any British exhibition, with the exception of fruit of the Castle Kennedy variety, once shown by Mr. Fowler at Edinburgh, the only time in which I ever saw that Fig in its true character. The Castle Kennedy is, however, a shy bearer, and quite unlike these Argenteuil Figs, and I was not a little surprised to find such grand sorts, evidently extensively cultivated in the neighbourhood of Paris, unknown to us, at least, by name. I have looked over the "Fruit Manual" (old edition) but cannot find any of these three Figs alluded to. The Black Genoa seems to answer to the description of the Noir Dauphine, but one cannot be sure from description only. The three Figs named are at all events grand sorts, and I have purchased them all; but, meanwhile, I should like to learn if they are cultivated in this country.—J. Simpson, *Wortley*.

Canvas Shutters for Covering Vine Borders.—Where it is desirable to keep ripe Grapes hanging on the Vines as late as possible, if the roots be in outside borders, some provision should shortly be made for throwing off excessive rainfalls. After trying several different coverings I find one which allows a free circulation of air over the surface of the border to be better than any close covering that comes in contact with the soil; evaporation in that case is rendered almost impossible; the border benefits little from any drying intervals that occur, and in some cases the soil becomes even more sodden and uncongenial to the roots than when no covering is used. Vine borders should never be positively dry, but cold rain and snow water should be kept from the roots while they are comparatively dormant. A form of covering that is easily put on and taken off is stout canvas stretched tightly on a light wooden framework, made in widths of 4 ft. and 5 ft., and of lengths sufficient to cover the border. This kind of covering should have two or three coats of paint, oil, or waterproof composition, and if high enough at the back to give a good fall, heavy rains will be effectually thrown off, and during bright weather the covering may be removed altogether. In spring such shutters are exceedingly useful for covering bedding plants while being hardened off, or for protecting the blossoms of wall trees; in fact, they are always serviceable for some purpose or another, and a coat of paint every year preserves them for a considerable time if used with care. I must add, however, that if made of lengths sufficient to cover a wide border, several cross bearers must be introduced in order to hold the framework securely together.—J. Groom.

How to Lengthen the Strawberry Season.—It is well known that Strawberry plants which have been forced early will, if planted out, generally bear a second crop in autumn, and if the early crop be heavy, the late one will be proportionately light, and *vice versâ*. A number of the variety La Margherita, commonly known in Covent Garden as Marguerite, were accidentally injured when in flower and were removed to the open air. This occurred in March. As it happened, they were kept in pots, and in June they began again to throw up bloom. They were then set out to a growing distance, and allowed to root into the soil through the holes in the bottoms of the pots. Under these conditions they flowered and fruited during the whole summer and autumn. There was always a dish of fruit to pick. The French, as a rule, do not care much for the large fruited Strawberries that we in this country prefer. They like better to grow a sort which gives a picking the summer through. By employing the Alpine, and judiciously cultivating it, they are enabled to attain this object. Could we not do something in the same way with some of our own varieties? The Strawberry is just one of those fruits of which the last gathering is even more relished than the first, and the only complaint that I have ever heard concerning it was that its season did not last long enough. If we wish to have Strawberries late in the year, we shall have to adopt some method of retarding their bearing season, as we cannot expect to get any variety to produce fruit much later than the kinds which we possess. That it is possible to accomplish this I firmly believe; all that is required is system, in order to ensure a supply of Strawberries during the summer, autumn, and even winter. Two years ago, at housing time, many plants of Sir C. Napier were full of fruit. They were put in a cold frame where but few could ripen; had they been placed in a warm house, there would have been plenty of ripe fruit in December. I remember, too, a beautiful basket of fruit being gathered at Christmas from some plants which had stood in pots during the summer. Perhaps some of the readers of The Garden may be inclined to act upon these few hints. I should recommend that the plants be allowed to flower, then have the trusses picked out and the plants placed in the open air. They thus receive a partial rest, and then start anew into growth. If planted out the yield would, of course, be greater.—J. Cornhill, *Byfleet*.

Strawberries in September.—We are now gathering daily fine fruit from Vicomtesse Hericart de Thury in the open air—plants that were forced first and planted out as soon as they were hardened off in March. The runners were removed, and the first flowers were also picked off, and now we have a batch of fruit scarcely second to the crops of the same fruit in June.—W. H.

THE FLOWER GARDEN.

EULALIA JAPONICA.

This beautiful Grass, as its specific name denotes, is a native of Japan, but it is by no means restricted in a wild state to that country, being found in China, India, and many of the Polynesian Islands, &c. The variety zebrina reached Europe by way of America; and although the inflorescence of that variety is very handsome, it is chiefly for its ornamental foliage that it will be grown. There are, however, some magnificent varieties waiting to be introduced, notably one from the Himalayan Mountains, which possibly may prove to be a distinct species. Instead of a digitate inflorescence it has dense, narrow, plumose panicles. The late Mr. R. Oldham collected specimens of a plant, very much like the one in cultivation, on hillsides in Japan. He describes it as growing from 3 ft. to 4 ft. high, which would also tally with our plant, and from the situation in which he collected it it should be hardy with us. The varieties which grow in warmer parts, if varieties they be, are plants of much larger stature, attaining from 6 ft. to 8 ft. or more in height. A panicle in the Kew Herbarium of one collected at Hong-Kong is upwards of 18 in. long and nearly 12 in. broad. Some of these grand Grasses should be introduced for associating with Lilies, &c., in aquaria. W. B. Hemsley.

ARE LILIES ANNUALS, BIENNIALS, OR PERENNIALS?

The solution of this question suggested itself to me on reading "W. J. T.'s" note of August 24 (p. 177), in which he says: "If this bulb had been perennial, *i.e.*, dependent upon itself for existence, and not upon a successive and distinct growth, as maintained by 'Dunedin,' I cannot think that it would have survived the treatment above mentioned, or, at all events, that it would have had strength enough to flower at this season." The beauty of the flowers, says M. Duchartre, "has attracted the attention of horticulturists to these plants for a good many years, but by botanists they have been somewhat neglected." I will go further and say that some professors of botany, both at home and abroad, have published theories that have no foundation upon which to rest. Some also tell us that the Lily is a perennial, and pass on without saying more. Our own countryman, Mr. Baker, has, however, gone into the subject at great length, and, if I may be allowed to say so, in a most admirable manner, in his "Generic Characters of all the Lilies" in the "Journal of the Linnean Society," a translation from which may be seen in The Garden of April 10, 1875. But even he, it appears, has found this particular part of the subject to be somewhat of a stumbling block in his path. Out of a list of forty-six Lilies, he describes twenty-nine as perennials, four as annuals, one as an annual or biennial, and to twelve he gives no name. In framing his synopsis he says in a contemporary: "If, in attempting to do this, I overlook or misunderstand any characters which are valuable for distinctive purposes, I hope that your horticultural readers will not fail to correct what I have mistaken, or to add what I have omitted, as this is a genus in which there is an especial need, in order to put it upon a sound botanical footing for botanists and horticulturists to work together." An invitation so freely and frankly given should be responded to in the same spirit. I therefore accept it with the view of simply stating that, in my opinion—founded upon experimental facts—he is mistaken in thinking that Lilies are either annuals, biennials, or perennials. Then, what are they? This is what I propose to explain. All true Lilies partake more or less of the rhizomatose character, that is, the underground portion of the stem, commonly called the bulb, moves year by year in its new growth, or in the growth of the new bulb, further away, in a direct line, from the scars or sites of the growth of preceding years, unless unnatural growths interfere. M. Max Leichtlin makes a slight mistake in saying of L. Washingtonianum that I would find inserted in one long sideward-growing bulb the accumulated growth of eight or ten years. He should have said "straightforward-growing," though, from the manner in which he held the specimen, it might have appeared to be growing "sideward," as in the case of my own specimen (p. 237). But mine was simply held so to enable the photographer to take in the greatest number of important points at one view. This is clearly illustrated by the artist (p. 135) of The Garden, February 17, 1877, by a sketch of L. Washingtonianum itself. There the artist places the specimen bulb as growing to the left. But this matters not, for it all depends on how the specimen bulb is held, as the change of position cannot alter the growth in a "straightforward" direction. In this case it is to be regretted that the artist did not pick off the old scales, so as to uncover the new bulb. At page 155, February 24, 1877, the same artist gives a very fine illustration of the same direction of growth in L. Hansoni. On our left we see the new bulb springing up from amongst the old scales, and on our right we see the old stem. If "F. W. B." had just taken the trouble to pick away all the old scales from around the new bulb and the old stem, he would have laid open the new bulb, the old stem, and the scar or site of the stem of the previous year—a view which would have been well worthy of his pencil. If he had done this, he would have saved me a great deal of writing. I know of no other plants which can be compared in their underground action with true Lilies, and, therefore, there need be no difficulty in marking the difference. We have an annual bloom, but not from the same bulb. The bulb that flowers one year will never bloom again. This is an incontrovertible fact, all attempts to prove the contrary having failed. While one bulb is flourishing in its first and only bloom, a new bulb within the old scales is progressing in its growth, so as to be enabled to bloom next year in place of the one now blooming, which will then be dead—thus keeping up a yearly bloom from successional bulbs for an indefinite number of years, if successfully cultivated. What I have now stated, it will be seen, is contrary to Mr. Baker's theory. He says, "A new bulb, whether grown from seed or from bulblets developed in the axils of the aboveground leaves of the floriferous stem, or produced in the axil of one of the bulb-scales, takes not less than three years, under the most favourable circumstances, before it develops a flower-bearing stem." So far I quite agree with him, but it will be seen that he entirely ignores the legitimate seed-bud, which, instead of taking "three years," grows up, and is ready to flower the very next season after the parent bulb has bloomed. Mr. Baker then proceeds: "The first season we get an ovoid mass, perhaps $\frac{1}{4}$ in. in thickness, composed of half-a-dozen tightly imbricated scales, which sends out three or four slender, radicular fibres from its base. At the end of next summer we have a bulb as large as a Hazel nut, with a copious development of strong radicular fibres from its under side, and the half-dozen scales prolonged above the soil into a rosette of oblanceolate leaves." This is all true enough, but it can only have reference to the growth of bulblets, small offsets, or to adventitious buds. It can have no reference whatever to the legitimate or successional seed-bud, which is always out of sight until the middle of the summer, when, if the blooming bulb be lifted out of the soil, it will be seen to be a grown-up, fully-developed bulb, bursting up from among the old scales. Mr. Baker goes on: "Next year, if circumstances be favourable, the flower-bearing stem is developed, and then, if nothing untoward happen, the bulb goes on living for an indefinite period, sending out each year a flower-stem from its centre and shredding off old scales with buds from their axils—more copiously in some kinds, less copiously in others—from the circumference all round." Such is, or was, Mr. Baker's belief. But it is now proved beyond a doubt that the same bulb does not "go on living for an indefinite period, sending out each year a flower stem from its centre." It is due to science that he should reconsider the matter, and amend his theory, or strike it out altogether, so that, in his own words, "this genus may be put upon a sound botanical footing for botanists and horticulturists to work together." L. candidum, or the White Lily—though certainly not a perennial, as Mr. Baker describes it—I look upon to be a correct type of a true Lily—the radical leaves being

The Zebra-striped Eulalia (E. japonica zebrina).

excepted—for whatever leading principles may be traced in its bulb, may also be traced, with ordinary care, in the bulbs of all true Lilies. It is the best known, being one of the oldest inhabitants of our gardens. The bulb is large, cheap, and plentiful, and is, therefore, well suited for dissection in any number at comparatively little expense. On this account, and in order that all who have a few white Lilies may be enabled to follow me, I have shown by photographic representations, and by the dissected bulbs themselves (drawn by The Garden artists), the progress of growth in the reproductive organs in all stages. At p. 143, February 16, 1878, I have shown the seed-bud in a dissected bulb taken up on the 1st of January, the seed-bud being somewhat larger than a canary seed. At p. 263, April 7, 1877, I have shown the seed-bud, now a young bulbule, about ½ in. by 5-12ths in. in diameter, taken up in March. In this case the artist made a mistake in showing the bulbule in front of the stem, instead of by the side of it, which would have shown that they were distinct from one another. At page 61 (July 20) I have shown another, marked No. 33 of the specimens, about 1½ in. by 1¼ in. in diameter, taken up in the beginning of May, and at p. 237 I have shown the same, now fully developed, about 2¾ in. by 2¼ in. in diameter, the bulb having been taken out of the ground on August 6 last, showing with what rapidity the new bulb grows, according to an increased ratio, between January 1 and August 6, during which time the parent bulb, unlike a perennial, has been preparing, and has actually bloomed. No one in the slightest degree acquainted with the true nature of Lily bulbs can look upon these representations without seeing that the bulb of the season can only send out one flower stem, and then by successional, but distinct, new bulbs send out afterwards, year by year, one flower stem each, the bulb that blooms one year being dead by the time its successor blooms next year. As to being perennials no one can say with truth that these bulbs "live and flower for more than two years," this being the definition of the term "perennial." Nor can they say that there is anything to distinguish them as annuals or biennials. With regard to the bulb "shredding off old scales," as Mr. Baker says, "with buds from their axils—more copiously in some kinds, less copiously in others—from the circumference all round," many of the readers of The Garden seem to have been misled by this passage. Mr. George F. Wilson, at p. 252, March 23, says: "I have always believed it to be an acknowledged fact that when L. giganteum flowered, its bulb decayed, leaving a circle of root bulbs to carry on the race." It is true that the bulb of L. giganteum, like all true Lilies, decays and dies after flowering, but the circle of root bulbs—or small offsets—cannot carry on the race in a direct successional line, as they are only fit to be picked off and planted out for "not less than three years," as Mr. Baker remarks, before they can develop flower-bearing stems. These small offsets may be found on the outside, or circumference, of many Lily bulbs, but it is more correct to call them "adventitious" buds, as the exact spot where they may present themselves cannot be foreseen, nor can it be known beforehand whether they will appear or not, nor in what numbers; whereas, the legitimate successional seed bud (which has been altogether overlooked by Mr. Baker), being unseen, will grow up and bloom the second season after it has been generated, after which it decays and dies. Though unseen until it becomes a fully-developed bulb, the expert knows at all times where to find the seed bud. In my paper, p. 237, when referring to the new bulb marked D in the woodcut, I said that if the new bulb were further cut away, we should find on the right, but close to the stem of the new bulb, the germ or seed-bud which was destined to grow up and bloom in 1880. Three days after I had written this I took the specimen bulb, at the request of a visitor, and picked off the scales on our right side until I had laid bare this same germ or seed-bud, which is now lying before me, adhering to the core close to the new stem—looking like a small disc of white wax, about the thirty-sixth part of an inch in diameter. Dunedin.

The Black Snakeroot (Actæa racemosa).—This is both a graceful and a pretty plant, though not very showy. When well grown it forms fine specimens, with thrice-divided root leaves 2 ft. in length. Its flower stalks are from 4 ft. to 6 ft. in height, much branched, on which are arranged, in long, dense racemes white feathery blossoms, which retain their freshness a long time, and are well adapted for cutting. The blossoms are succeeded by small green fruits, which remain on the plants for two or three months. Taking it altogether, it is a strikingly attractive hardy plant, suitable either for the ordinary border, for margins of shrubberies, or as isolated specimens on lawns, the latter being preferable, as in that case it is shown to the best advantage. It thrives best in partial shade, as it inhabits the shady woods extending from Canada to Georgia and the Western States of America. Nearly allied to it, and equally as fine a plant, is the Fœtid Snakeroot (Cimicifuga fœtida), but the seed vessels are different, being longer and membraneous, whilst in A. racemosa they are nearly round and berry-like.—W.

LILY CULTURE AT ROCHDALE.

Mrs. Newall has just sent me a few words of comment on "Dunedin's" letter (p. 216). She writes as follows: "'Dunedin' misunderstands my letter a little. I do not say that my plants degenerate and that the flowers grow smaller and the stems dwarfer every year. I simply mean that, contrasted with what they were when only put out for the summer, they are smaller. Against that I set the great gain that, becoming acclimatised, the flowers appear earlier each year, and the stems, strengthened and hardened, if shortened, require no props. My friend, Mr. Wilson, has seen my Lilies. I am no botanist, only a lover of flowers, and act from experience and observation. I garden, too, under great disadvantages; the smoke from mills, brickkilns, and tile works comes between my flowers and the sunshine; even the trees are hide bound, and soot smothers up the pores of their leaves. When the wind blows from the direction of the tile works you can trace its pathway through the blighted foliage. If we have much rain there is too much leaf, too little flower; if there is little rain everything is black with soot; so black, that Nature when she brings her rain clouds so low over our hills intends us a kindness, for the rain deluges are needed to wash off the accumulated layers of dust and soot. Last year the frost came unusually early and nipped my Lily buds; this year they are flowering earlier and will escape. In 1876 (December), long after the Dahlias hung blackened and rotted on their stalks, my dinner-table was decorated with specimen glasses full of the lovely scented flowers of my L. speciosum. I generally cut the large buds before they open, because our sooty atmosphere blackens the petals, and its rains and winds rob the stamens and powder the pure white blossoms with their orange pollen. About transplanting, I cannot help thinking there are two sides to the question, and that many plants, both bulbous and tuberous-rooted, flourish best undisturbed. Have you never noticed and envied in old-established gardens clumps of Martagons, of L. candidum, of Scillas, Lilies of the Valley, Fritillarias, and Hellebores, growing in a luxuriance into which no cultivation can coax them in our own garden borders?" I have often quoted Mrs. Newall's Lilies as showing what can be done by loving care in unfavourable situations, but I hardly before realised the difficulties with which she had to contend. G. F. Wilson.

Heatherbank, Weybridge Heath.

—— I am sorry if I have said anything (p. 216) to annoy Mr. Wilson, but certainly I could not help being surprised at the advice which he gave to Mrs. Newall, as I thought he must have overlooked certain important points in her letter which at once caught my eye. But now he seems to make matters worse, for in his explanation (p. 238) he admits that, "as a fact, he did see Mrs. Newall's Lilies in growth as recently as last summer;" and yet, when she tells him that the flowers are smaller this summer, and also that the plants are dwarfing—one of the worst complaints to which the Lily is liable—he says: "My advice was short—'leave well alone.'" Mr. Wilson must have known that Lilies may do very well one season, and go off all of a sudden next year; therefore, "leaving well alone" should have no place in the Lily grower's memorandum book. In fact, to use Mr. Wilson's own words, Lilies should be attended to with the most "intelligent and loving care," and not be left, at least in this country, to take care of themselves. He says he thinks Lily growers of experience will agree with him that he was right. I think not. If he will look at "R. C. R.'s" letter, on the same page with his own, he will see that "R. C. R." says: "From a single stem my plants increased year by year till the stems numbered about thirty, but by this time they had begun to grow weaker, and the blooms were growing smaller," almost the very words Mrs. Newall makes use of. "R. C. R." then goes on: "It occurred to me that the soil was exhausted, so I resolved on seeing what was at the root, and in making the shift I found deep in the soil quite a nest of bulbs; they were separated and planted in fresh soil, and now I have bulbs by the hundred, and blooms of the greatest beauty by the thousand." This is strong confirmation of the correctness of my doctrine when I said, in reference to Mrs. Newall's Lilies, that "they were dwindling away for want of proper cultivation, being clubbed together, and living on one another, instead of being lifted, separated, and transplanted into fresh and better soil." Mr. Wilson says that I am not correct in assuming such a thing. My experience is my authority for saying so. Many years ago, when Mr. James Carter first offered L. speciosum (then called lancifolium) for sale, I procured a supply, and planted them out of his grounds into my own garden on the same day. Every three or four years I lifted and transplanted them with the same results, that is, the first year they bloomed best, the second year very well, but the third and fourth years they evidently deteriorated. I have the successional bulbs now in my garden (for, remember that the parent bulbs die every year), where they have been left undisturbed for the last four years, for experimental purposes. But now they are fewer in number and dwarfer—a sure sign that the successional bulbs are degenerating, their constitutional organisation being affected through the want of generous diet and proper culture. Many thanks to Mr. J. Stewart Gathorne Hardy for his communication (p. 238). Dunedin.

SALVIA PATENS BEST LIFTED IN AUTUMN.

I well recollect the time when this lovely blue-flowered Salvia was first used for planting out-of-doors, and the unqualified praise which it received from all who saw it. When the ribbon style of summer bedding was first introduced it formed one of the most charming objects in such combinations, relieving them somewhat of their objectionable formality made still more conspicuous when the close-growing plants selected for ribbon work in later years came into use. It is equally suitable for planting in masses amongst herbaceous plants, or in any position in gardens where flowering subjects of a like stature are admissible. In fact, it can hardly be spoken of too highly, with the exception that it is not of much use for cutting, as the flowers fall off quickly; yet, even with this drawback it is difficult to understand why this Salvia is now so seldom seen. The fact can only be accounted for on the ground that, in the never-ending crave for novelty, there is not room for all, and that it, along with no small number of most deserving plants, is consigned to oblivion to make way for new-comers. But communications such as that of "J. G." (p. 239) respecting this plant lack the caution necessary in writing upon the cold-resisting powers of half-hardy subjects like this, and are calculated to lead to serious disappointment, for, except in the most exceptionally favoured spots in the kingdom, a severe protracted frost will reach and destroy the roots when under the ordinary protection of ashes, tan, leaf mould, or anything applied in the manner in which these are used. The real fact is, that the recent mild winters which we have had have induced many to look upon the cold-resisting abilities of a considerable number of plants from a point of view which the first severe continued frost that we experience will dispel in anything but an agreeable way. So little trouble is involved in taking up and storing away the roots of this Salvia and other plants of a similar character, that it is unwise to risk them out-of-doors, and the superior manner and long period during which it, and other plants of a like nature, will flower when taken up and divided, so as to confine them to fewer shoots than when left in an undisturbed mass, with the opportunity given for fully incorporating manure with the soil, render their being taken up in the autumn preferable in every way to risking their destruction in the open ground.

T. Baines.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hardiness of Physianthus albens.—When visiting an old fashioned garden belonging to some lady friends, in this neighbourhood, the other day, I was much surprised to see a most luxuriant mass of the above-named plant from Buenos Ayres, figured in Vol. LIX. of the "Botanical Magazine" (published in 1832), tab. 3201, and usually supposed to require the temperature of a stove, or, at least, of a warm greenhouse, covering the garden wall to a height of 9 ft. by 12 ft., where, my friends informed me, it had grown unprotected for these last twenty years, proving itself to be almost perfectly hardy, only severe frosts cutting back and injuring those shoots that overtop, and so are deprived of the protection afforded by the wall. It is deciduous in winter, and occasionally produces handsome, large, deep orange-coloured fruit, the size of a turkey's egg, but somewhat longer, and resembling the fruit produced by some Passifloras. My friends had never heard any name for this plant, but had named it for themselves The Cruel Flower, from the fact that the blossoms, which seem very attractive to all sorts of insects, and especially to the humming-bird moth, have within them some viscid or glutinous matter, to which the proboscis, when inserted into the flower, seems to adhere so firmly, that they are unable to withdraw it, and, being thus detained prisoners by it, flutter about till they die.—W. E. G., *Queenstown.*

Phlox Drummondi a Continuous Flowerer.—Not the least amongst the many good properties possessed by this beautiful annual is that of its flowering continuously late in autumn; when most of the occupants of the summer flower beds begin to fade this is even more floriferous than in the height of summer.—J. G.

Flower Gardening at Lambton.—This has been very brilliant this season. Conspicuous amongst Pelargoniums may be named Robert Fish, a variety which seems to do extremely well in the North. It has a sturdy habit, and the flowers are borne upon stout foot-stalks well up above the foliage. Amongst Lobelias, St. Martin's Blue appeared to be the best; it is a dark, bronze-foliaged variety, of an effective shade of colour. Another plant which succeeds well at Lambton is Harrison's Musk, which the extreme drought experienced there this summer did not affect nearly so much as it did other bedding plants; and so persistent are its blooming properties, that the heavy rains which we had in August did not impair its appearance for more than a day or two.—Tynedale.

Protecting Tall Chrysanthemums in Windy Weather.—The situation in which we place our pot plants is sheltered by walls on the north and south, and by hothouses on the east and west, but it is otherwise fully exposed to sun and air. The plants are arranged in lines across the plot of ground, and a strong stake is driven down at either end of the line; cords are then run between the stakes at from 1 ft. to 2 ft. apart, and made fast at each end. The base of the stem is made quite fast to the bottom cord, but as the extremity of the shoot is approached the ties are made gradually looser, the last one, which is within 2 ft. of the extremity of the shoot, having an inch or two of play. The consequence is, that in windy weather the whole mass moves to and fro with the wind with little or no breakage; whereas, before this plan was adopted, though to every stem there was a stake, a sharp gust of wind used to break the tops off the shoots where they were made fast to the stakes. No plan is so safe as leaving plenty of space for vibration, whether upright stakes be used or not.—W. Hinds.

Useful Plants for Carpet Gardening.—Allow me to thank Mr. Niven for his note (p. 234) on this subject. I shall certainly obtain the two plants which he names, viz., Veronica læta and Acæna microphylla. The other two—Mentha Pulegium gibraltarica and Herniaria glabra—I grow largely, but my experience of them is the very opposite of that of Mr. Niven, as the Mentha when cut weekly with hand-shears is the most perfect sheet of emerald green it is possible to conceive. The Herniaria is a duller green, and, as a matter of course, not nearly so effective, but it has this advantage, that it requires no clipping, as it naturally grows quite flat on the ground. The best cream-coloured or whitish-yellow plant for such work is Sedum acre elegans; we have used it in lieu of Mesembryanthemum cordifolium variegatum, and with decidedly better effects.—W. Wildsmith, *Heckfield.*

Creepers for Training over Cottage Doors and Windows.—It is a simple matter, the planting a Honeysuckle, Clematis, or Jessamine beside a cottage doorway, or the placing of a potful of earth on the window-sill outside, and sowing a few seeds of the Canary creeper or Convolvulus in it; and yet what a large amount of pleasure it is capable of affording, not only to the actual possessors, but to passers-by—indeed, from my point of view, the latter is one of the greatest benefits it confers. Example is better than precept, and the lesson taught by a chastely decorated cottage front is carried home to many hearts. Some time ago I was passing a cottage that gave evidence that more than ordinary pains had been taken in ornamenting its doorway and windows with living plants. Over the doorway were trained Clematis Jackmanni and C. Flammula, mixed and blended together; and as the former became thin of flowers the latter opened its numerous small white sweet blossoms, which scented the atmosphere round. Round the windows were trained Canary Creepers and blue Convolvulus mixed, planted in boxes, which were also furnished in addition with Mignonette. I waited a few minutes beside the house to see what notice was taken of it by the people passing, and the effect was magical; not a single face but wore a pleased look as the eyes glanced upward and took in the view. And, after all, the trouble and expense was a mere nothing; at the most, two or three shillings would buy all the necessary requisites to begin with, and many a man spends that or more in a single week without deriving the least benefit from it in any sense.—E. Hobday.

Phytolacca decandra.—At this season there is scarcely a hardy herbaceous plant to equal this. Its large handsome fruits are quite ornamental, and the plant will keep in good condition until it is cut down by frost.—J. G.

NOTES FROM "THE PINES."

In a fairly large collection of ornamental shrubs, I know of none that is more desirable than the

Double-flowered Deutzia crenata.—I refer to the shrub first introduced under that name, and which has been in our collections for several years. In the first place, it fills a gap, by coming along just after the Weigelas and other early-blooming shrubs have done flowering, and makes its display about the middle of June. It first gives us a few days of promise, and these show the outside of the petals with a most charming tinge of purplish rose. The few days it remains in this state, are, in my opinion, the best; but after this it comes into full flower, and the bush is a sheet of white, as, by opening, the interior petals quite hide the outer coloured ones. After this excellent shrub had become well established, the nurserymen offered, with some flourish.

Deutzia crenata alba fl.-pl., which, being interpreted, means the White Flowered Double Deutzia crenata. This has flowered with me this season, but it is in no respect preferable, indeed, not equal to the older variety. It is true that the flowers are pure white throughout, but give only pure white, while the older kind gives us both the purple-rose tinge before it fairly opens, and at length as good a white as the other. In former notes I have mentioned our

Native Wistaria, Wistaria frutescens, as a much neglected climber. It does not flower until the vine is in full leaf, and its flowers are not so large or of so deep a purple as the more generally cultivated Chinese species. It is for the very reason that it flowers later that I value it. The Chinese is good in its way; still, if I could have but one, I should take our native, as it gives foliage at the same time with its flowers. Having cultivated the ordinary purplish-flowered form, and also the white variety for several years, I was quite suprised to find, in conversation with horticultural friends around Boston, to learn that

The White American Wistaria was quite unknown at that centre of horticulture, This led me to "hark back" on the plant, and trace its origin. I found that my plants were sent me, the season that I came to "The Pines," with a very generous contribution of other hardy shrubs, from my not very distant neighbour, Mr. A. S. Fuller, and that he procured his original plant from Mr. W. R. Prince, of Flushing, who had in his time a most remarkable collection. Beyond this it is not possible to trace its history; but those who knew Mr. Prince in his younger days, are aware that he spared no pains in procuring any new and strange plant that he might hear of, in any part of the country. Several years ago a gentleman in Tennessee (I think) sent me some small trees of

The Dyehouse Cherry, so called because it originated on the place of a person by the name of Dyehouse. When they came, I, to save them, put them in temporarily where they grew a year or two, and were then set out where they were to remain. This is the first year that they have borne anything of a crop, and though the trees are not over 6 or 8 ft. high, they were fairly filled. The fruit was ripe at least a week or ten days before the Early Richmond, heretofore the earliest Cherry I had, and while about the size of that, is a palatable fruit. The Early Richmond, even when dead ripe, is, to my taste too sour for anything but cooking.

New Varieties of Japan Iris.—Mr. Thomas Hogg, who was the first to introduce Iris Kæmpferi, has selected 20 of the finest varieties of this charming plant, which he has named as follows: 1. Ichiban, light reddish purple, pencilled with white; double; dwarf; medium early. 2. Prof. Thurber, purplish blue, mottled and spotted with white, fine yellow eye; double; early; first-class. 3. Princess, lilac, finely pencilled with blue; double; dwarf; fine. 4. Robert Buist, dark indigo blue, fine yellow eye; double; first-class. 5. Mr. Buchanan, light indigo blue, fine yellow eye; double; large; extra fine. 6. Emperor of Japan, maroon; first-class. 7. Pearl, pure white; tall; early; first-class. 8. Daimio, dark pink, pencilled with white; medium height; early. 9. Fusi-yama, white, pencilled with purplish stripes, purple centre; tall; early; first-class. 10. Mr. Chotara, light blue, striped and mottled with white; tall; early. 11. Minister Mori, white, deeply laced with pink; early; first-class. 12. Iyeyas, purplish blue, solid colour; tall; early. 13. Murusaki, purple, wavy petals. 14. Water Nymph, white, deeply laced and shaded with lavender; tall; early; distinct. 15. Diabertz, deep indigo blue; semi-double; dwarf; medium early; first-class. 16. Imperial Standard, purplish pink, mottled with white; tall; early; first-class. 17. Otentosama, light purple, slightly mottled with white; tall; very early; handsome. 18. Empress of Japan, lavender, pencilled with white; tall; medium early; first-class. 19. Perfection, white, pencilled and mottled with purple; dwarf; medium early; fine. 20. Virginalis, double white; extra fine.—"American Agriculturist."

PLATE CXLVI.

DWARF ALPINE ARMERIAS.

(WITH A COLOURED FIGURE OF A. SETACEA)

Considering the large amount of attention that has been paid for some years past to Alpine vegetation, it is somewhat surprising that this interesting class of plants has not become more plentiful than they are. To all true lovers of such miniature forms of vegetation the following will, I feel confident, be truly welcome, and will prove valuable additions to their gardens.

Armeria setacea.—Of this the accompanying figure will give a good idea. Its little globose heads of pink flowers are produced so plentifully as almost to conceal the other portions of the plant. The leaves are flat on the upper surface with a distinct depression down the centre; they are very narrow, and about 1½ in. in length. The flower stems vary from 1 in. to 3 in. high. This and A. juncea, mentioned below, were found on barren, stony mounds, on elevated table-land, in the south of France. They have been cultivated for two years in the nurseries at York, and have proved to be quite hardy and of easy culture. They grow freely in sandy or stony earth, either in the open border, on rockwork, or in pots, and their neatness and compactness of habit fit them for association with the choicest of Alpine flowers.

A. alpina.—This is found at from 2000 ft. to 8000 ft. elevation on nearly all the European mountain ranges. It is rather dwarfer than the common form A. maritima, and, if possible, more compact. The colour of the flowers varies considerably from deep rose to pure white. I have grown the variety for the last few years called rosea as a rock plant, and very pretty it is when planted in a dry and somewhat poor soil.

A. cæspitosa.—This is a very handsome rose-coloured species from the south of Europe, where it is found growing at an altitude of from 5000 ft. to 8000 ft. above the sea level. Its flower heads each measure from ¾ in. to 1 in. in diameter, and are borne on slender stems from 1 in. to 2 in. high, from June to September. The leaves are narrow and flat on the upper surface, with a slight depression down the centre. They are from ½ in. to ¾ in. long, in dense tufts, with a branching, woody rootstock. It is as yet seldom met with in cultivation.

A. juniperifolia.—Some consider this to be synonymous with A. cæspitosa, but the two are quite distinct, not only in habit, but in other respects. A. juniperifolia is a diminutive plant, forming hemispherical little tufts from 2 in. to 3 in. in diameter, composed of small rosettes from ½ in. to ¾ in. across. Its leaves are very minute, only being from ⅛ in. to ¼ in. long, with a small spine at their extremities. The flowers I have not yet seen. It thrives well in smashed granite and sandy loam.

A. juncea.—This is another pretty little species that resembles tufts of miniature Rushes, about 1 in. high. Its flowers, which are pale pink, are produced in great profusion in dense heads ½ in. across, set on slender wiry stems from 4 in. to 6 in. in height.

With regard to culture, I may just remark that they thrive freely in any well-drained, rather poor, sandy loam. I have noticed that if the soil in which they are planted be too rich, they thrive most luxuriantly for a time, but in wet weather they are liable to damp off between the foliage and the root. The different species named above range, as regards the time of flowering, from May to September. The dwarfer kinds are propagated by means of seed, and the more vigorous sorts by division early in spring or in autumn. R. P.

[For the plant from which our figure was prepared we are indebted to Messrs. Backhouse, of York.]

Half-hardy Shrubs in Pots.—It is surprising that the common Continental practice of growing certain shrubs in tubs and wintering them in cellars has not been adopted among us. Of the shrubs useful for this purpose, the Oleander, the Maple, the Pittosporum, and the common Fig may be named. The practice is only worthy of adoption in towns and other places where plants may not be easily had in the usual way. It is not worth carrying out as regards hardy shrubs that grow in the open air with us, particularly as there is a variety of fine half-hardy shrubs that require winter protection. Given that, they flower well out-of-doors in summer, and with their aid a pretty little garden may be made in a hot courtyard in front of a house on a

[illegible]

balcony, and in various other positions where gardening in the usual way is out of the question. Would not other fruits be worth growing in this way as well as the Fig?—V.

PROPAGATING.

Bouvardias.—In order to increase these successfully, they require a box in the propagating house to themselves. Plants of them for propagation must be cut back to the ripe wood, and got into a house, the temperature of which is 65°, in March, when they will push young growths quickly. Keep them well syringed two or three times a day, and when the shoots are sufficiently large take them off, and make them into cuttings as shown at fig. 1. Insert them in sandy soil (peat and loam), with sand on the surface, and plunge them in a brisk bottom-heat in the cutting box. In about ten days roots will be emitted; they must be occasionally moistened overhead and kept close. As they begin to show signs of growth air should be gradually admitted, but not so much at once as to give them a check, as their aftergrowth depends very much upon how they are treated when young. As the wood gets harder, the cuttings should be made as seen in fig. 2. Where roots are employed, select some strong plants in March, shake away the soil, and cut off all the strongest and freshest-looking roots, avoiding such as look in any way decayed; cut these up into pieces 1½ in. long, as represented in fig. 3; place them flat in pots or pans filled with the same soil as that used for the tops, and cover them over to the depth of ¼ in. with soil, or they may be placed singly in very small pots; give them a good watering, and place them in bottom-heat, but without any covering over them. As soon as they begin to push through the soil, water sparingly, and as soon as they have made sufficient growth pot them off and set them in a humid atmosphere. If the roots be not stout and strong, they will not be likely to make strong plants; weakly-rooted varieties are, therefore, best increased by means of ordinary cuttings. H. H.

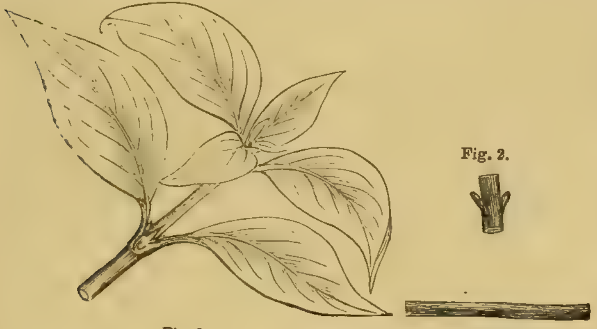


Fig. 1. Fig. 2. Fig. 3.

Cuttings of Bouvardia Humboldti corymbiflora.

Hall's Honeysuckle (Lonicera Halleana).—In the general confusion in which the genus Lonicera is at present, I will not undertake to say to which botanical species this belongs, but as it is in several catalogues as Lonicera Halleana, there can be no difficulty in getting it under this, its horticultural name. Any one who knows a good plant when he sees it, cannot fail to appreciate this as a most valuable climber. Its lithe slender stems make it a most manageable plant. I have it growing flat upon the ground, and running up upon what is part fence and part trellis, and also under pot culture. It is one of those easy-going plants that will grow anywhere, and bloom whether 2 ft. or 20 ft. high, and—what is more to the purpose—keep on blooming. It blooms right along all summer. Its flowers, when they first open, are of the purest white; a little while later they are of a delicate buff colour, and before they are done with, become darker still—almost an orange colour. All the while they have a most pleasing perfume.—"American Agriculturist."

GARDENING FOR THE WEEK.

Indoor Plant Department.

Sobralias.—These Orchids, though remarkable for the size of their individual blooms, do not find favour with cultivators to the extent to which their merits entitle them. One reason alleged for their being not so much grown is the short-lived character of the flowers, as they do not last more than three days, but against this it must be borne in mind that they are amongst the most certain of free-flowering plants. Every fully-developed shoot of the preceding year's growth, with the most ordinary management, may be considered certain of blooming, producing in succession from three to six flowers, so that with a good-sized plant from six to a dozen blooms will be in perfect condition daily for several weeks. If required for cutting, where any of the many slightly different forms of March stands are employed, nothing that I have ever tried is more effective for placing in the base of these than Sobralia flowers. The plants will now be in active growth, and if the old bloom stems have not been cut away from such as flowered early in the spring they may now be removed, but I have found it in practice much better not to follow the course frequently pursued in removing them as soon as the flowering is over, for, as might be supposed, they exert a good deal of influence in imparting strength to the young shoots now progressing, which spring from eyes immediately at their base. In place of cutting them away early, particularly with young plants which it is desirable to grow to a larger size after blooming, tie them out at a considerable angle from the centre of the pot so as to give the rising shoots room and prevent their being drawn up, which the old bloom stems will be apt to cause if allowed to overhang the young growth. There is no position in the Orchid house that suits these plants better than the extreme end of the structure, where this, as it always should, consists of glass, in place of the too often introduced brick wall. In such a situation, their clean, healthy-looking shoots form a pleasing contrast to the dwarfer-growing plants, and do not overshade them; so placed, the Sobralias themselves do not become drawn up too tall, a disposition to which is objectionable. There are several varieties, especially of the macrantha section, differing little, except in their dwarf or tall habit. It is well to select the lowest growing kinds, of which Woolley's dwarf variety with its large intensely-coloured flowers is one of the most desirable; S. Liliastrum is another fine kind, as also S. violacea and S. virginalis. All the family are very strong-rooting plants, and now whilst making their growth should be plentifully supplied with water, syringing them freely once a day overhead, by which means they will be kept quite free from thrips or red spider, which will sometimes attack them where sufficient water is not applied to the leaves. From their strong-growing disposition they require a good deal of root room, and although early in the spring is the most suitable time for repotting, yet where they are manifestly suffering from want of root space, they may be shifted at any time, simply being careful not to injure the roots, which will now be growing freely, more than can be avoided.

Sophronitis.—This, especially the brilliant scarlet S. grandiflora, deserves a place in every collection; in fact, half-a-dozen or more specimens suspended in the house tend to liven it up during the dull, winter months in a way that few other plants of such small growth are capable of. They are the most effective when grown on blocks hung up, or on pieces of cork; but in this way now, when making active growth, they will, in common with other subjects similarly grown, need to be well supplied with water, to retain sufficient of which, for the sustenance of the roots, a moderate amount of Sphagnum should be used. Where this has become detached from the blocks, or removed by constant use of the syringe, a little fresh should be added.

Phalænopsids.—These will now be in their full season of growth, and should be accommodated with the best light position in the warmest house. Their extremely free-flowering disposition frequently causes the production of bloom-stems at all times of the year, but it is by no means advisable to encourage their flowering whenever inclined to do so, and in the case of plants that it is desirable to grow on to a larger, stronger condition, any flower stems now produced may, with advantage, be rubbed off as soon as they make their appearance.

Propagating Phalænopsids.—When the plants have got strong and after blooming the extremities of the flower-stems alone were removed, leaving the lower portion adhering to the plants, these will sometimes form young plants from the joints left remaining; they should not be disturbed until they consist of a couple of small leaves, and have formed roots. When these exist they may be taken away from the plant that has produced them, put on blocks, and treated like the older examples. The handsome P. Luddemanniana increases freely in this way. If, instead of increasing the number of separate individual plants, it is deemed more desirable to have larger masses, the shoots bearing these young plants may be bent round and secured to the block or surface of the pot in which the old specimen is grown, allowing the young ones in this manner to become established, and go on with the crown that has made them. This may be encouraged until the plant consists of several, say six crowns, in which way, when the whole have acquired sufficient strength, they will produce a proportionately increased number of bloom stems, having a much more imposing appearance when in flower than is possible with a single crown however strong. Young Orchid growers will do well also not to allow such species as P. amabilis and P. grandiflora to continue blooming so long or so often as they are frequently disposed, otherwise the requisite amount of leaf growth, which should be formed each season, will be non-existent, the result of which is that the plants, with their natural disposition to cast off a portion of their lower leaves, will do this without forming a corresponding or a greater quantity of new, in which case the specimens, instead of increasing in size and strength, become reduced in both.

Schomburgkias. — These drier-atmosphere-requiring plants should, through the rest of the autumn, be placed where they will get the least amount of shade, with correspondingly less moisture, and the most air that is admitted, without which, however strong the growth, their flowering is doubtful; for, as I have frequently urged in respect to these and some other Orchids that do not bloom freely with the usual Orchid house treatment, their flowering is very much more dependent upon the conditions they exist under whilst the growth is actually being made than to any amount of drying up or pinching process which they may afterwards be subjected to. These Schomburgkias are distinct growing plants with extremely stout, thick, leathery-textured leaves, very easily kept clean, and tenacious of life, bearing strong, tall, flower stems, the individual blooms very distinct and lasting an unusual length of time in a fresh condition. S. tibicinis, S. undulata, and S. crispa marginata are well worth attention by those desirous to avail themselves of one of the greatest charms possessed by the Orchidaceous family—that of producing flowers distinct in form and general character.

Odontoglossum grande.—This really grand Orchid, with its several forms, is one of the best autumn-flowering plants in existence. According to the conditions under which it has been grown, it will now be in bloom or progressing in that direction. There is one peculiarity in the plant, that is, the extreme partiality which slugs and snails have for the advancing flower stems; if there happens to be in the house even a single individual of the large brown slugs that so often and so mysteriously find their way into Orchid houses, it will almost be certain to get to any advancing spikes that there may be of this Odontoglossum, and in a single night will, most probably, destroy every flower. To avoid such disappointment these pests should be continually sought for. Their existence may often be detected by the slimy track they leave for weeks before they are met with. Nothing I have tried they are so fond of, or to which their sense of smell, instinct, or whatever it may be, so soon attracts them, as good sweet Apples sliced. If these be put about amongst the plants and looked over two or three hours after dark for a few nights, the intruders are nearly sure to be met with.—T. Baines.

Greenhouse Plants.—Preparation must now be made for immediately getting in hard-wooded plants, such as Heaths, Epacrises, Genistas, and all others of a similar character. These will not suffer injury out-of-doors so long as there is no frost or excessive rains; but on the appearance of either, all subjects like the above-named should be housed at once. A little judgment should be exercised in arranging them in their winter quarters, for, although they all need as much light as can be afforded them, the Heaths should have the lightest, most airy, and coolest end of the house; and any of the more delicate hard-wooded subjects should have plenty of light and be put where the temperature will be somewhat warmer than that in which the Heaths are placed. Genistas and Epacrises will thrive where there is not quite so much light as required by the former plants. Examine all before they are taken in the house to see that they are free from aphides, red spider, and thrips, for if any of these insects only exist in small numbers they will ultimately leave quantities of eggs that will come to life in the spring. Washing with weak Gishurst water (about 2 oz. to the gallon) will be found the best means to get rid of red spider and thrips; Tobacco fumigation is the most convenient remedy for destroying aphides on all hard-wooded plants.

Camellias should also be at once got into their winter quarters; they likewise will succeed in a position where there is less light than many hard-wooded subjects. Nothing adds more to the appearance of these plants than keeping the leaves clean; it is also essential to their health that no accumulations of dust be allowed upon them, for if they be affected at all with brown scale the dirt will stick to the glutinous excrement of the insect, and this, if not removed, will cause the foliage to turn yellow and fall off. If infested with white scale, the best implement for removing it from the wood is an ordinary tooth-brush, after which sponge the leaves one by one on both the upper and under surfaces. Wash the pots of all plants as they are taken inside, and remove any Moss that may have accumulated upon the soil.

Pelargoniums, both large-flowered and fancy varieties, may yet remain out in cold pits or frames; but the soil must not be allowed to get too wet through the lights being off; the latter should now be on during the night and day, tilting them as the plants require air.

Kalosanthes should be taken in; however well these have ripened through the summer they should be placed well up to the roof, or the under leaves near the base of the branches are liable to suffer; give them no more water than what is necessary to keep the roots in a healthy state, but do not let them be so dry as to cause the plants to flag; they are easily struck at any season, rooting from the smallest slip. If cuttings be now put in they will get established before winter, and make growth next summer considerably in advance of those struck in the spring; some of the weaker inside growths that are not likely to flower, the removal of which will in no way interfere with the next year's bloom, will answer for cuttings. Take them off about 5 in. or 6 in. long, strip the leaves from 2 in. of the bottom of the stems, and insert five or six of them close together in 4-in. pots filled with sifted loam to which has been added one-fourth of sand; the pots must be well drained for either large or small specimens of Kalosanthes, as they cannot bear anything approaching stagnant moisture; give a little water, but do not cover the cuttings at all in the usual way under propagating glasses, or they will be liable to damp. They will root in an ordinary greenhouse temperature, but if there be a frame or pit a few degrees warmer the plants will thrive all the better. In the spring the points should be pinched out, and each pot of cuttings shifted entire into larger pots, as in this way they will make fair-sized plants for flowering the ensuing year.

Celosias for autumn flowering that are now fast filling their pots with roots must be well supplied with manure water, the use of which for almost all plants that are required to bloom in comparatively small pots is not sufficiently understood. Keep them turned round to the light, which is not only necessary to preserve a uniform shape, but also to allow every part of the plants their full share of light, without which the leaves of those that are of a soft nature and short endurance are liable to fall off before the flowering is over, in which case the beauty of the plants is lost, for, however full of bloom a plant may be, without a sufficiency of healthy foliage it is shorn of half its attractiveness.

Fuchsias.—Cuttings of these that were put in to strike some weeks ago for flowering early in spring will be now ready for potting off singly. Put them in 3-in. or 4-in. pots, according to the quantity of roots they have made. They should have good ordinary loam in which to grow, new if it can be had; if not, such as has been used during the early part of the season for growing Cucumbers will do. Fuchsias do not require quite so much sand in the soil as most quick-growing subjects, but they like it pressed moderately firm in the pots. These summer-struck cuttings are greatly preferable for early flowering to those rooted in the spring, however early they are then put in, but they thrive best when they can be accommodated through the winter with a night temperature of from 45° to 50°; the latter suits them better than the former. Placed near the glass they make steady progress, and not only bloom before the old cut-back plants, but are much nicer looking. If the young plants show any disposition to form flowers during the autumn, these must be nipped off as soon as they make their appearance. Keep each plant tied up to a small stick. Fuchsias are so easily struck and easily grown, that the old, naked-stemmed plants so often met with should never be tolerated.

Lilies in pots of the lancifolium section, and any plants of Lilium auratum that have flowered late, should be set out-of-doors after they have done blooming, in a sunny situation, and sufficiently but not over watered, until the leaves have turned yellow and fallen off naturally. The unsatisfactory condition in which these and similar plants are so frequently met with is often traceable to the comparative neglect which they undergo after flowering, through being thrust into any out-of-the-way place, and either prematurely dried off for want of water, or deluged with rain if the weather happens to be wet. The longer the leaves keep fresh and green the stronger the bulbs will be next year. It sometimes happens that odd plants of these Lilies in a collection, through some cause or other, lose their leaves prematurely, even before they have ceased flowering; if these be marked so as to identify them the following season, it will be seen that, instead of improving in size and strength, they have become weaker. If the plants have not sufficient sustenance through their being too many in a pot, insufficient light in the early stages of their growth, or not enough water at any time whilst growing, the leaves come thin, and have not strength to remain on the plant the allotted time. Lilies that have flowered early, and the tops of which are already dead, should be placed where they will not be exposed to drenching rains, or suffer from the opposite extreme, either of which is fatal to the bulbs increasing in size and ability to produce flowers as they ought to do.

Chrysanthemums in Pots should now receive their final tying, using sticks enough to support the plants and keep them from being broken by the wind. As soon as the flowers are set thin out the shoots; it is a mistake, even for ordinary decorative purposes, to allow the lateral flowering shoots to remain crowded, as the size of the blooms is thereby much reduced, and in texture they are so much thinner as not to last nearly the length of time they do when no more flowers are left on the plants than they can properly support. When the pots are plunged, or even if standing on the surface of the ground, they will root through the bottom if not moved occasionally; to prevent this it is a good plan to turn them round once a fortnight, for if the roots be permitted to take much hold of the soil on which they stand they must necessarily be broken when the plants are taken indoors, and ruptures in that way give them a check which causes imperfection in the flowers. The open centres that badly-managed Chrysanthemums so often exhibit are mainly attributable to the checks which the roots receive, or being allowed to bear too many blooms. Give plenty of manure water now; they will bear it in large quantities, and stronger than almost any other plants.

Flower Garden.

Bedding Plants.—If any trace of mildew existed on the plants from which Verbena cuttings were taken, it will have been almost certain to have made its appearance whilst they were kept close for the purpose of rooting. They should now be carefully examined, and, if any be found, dust them at once with flowers of sulphur; the white varieties are most subject to it, but if care be taken through the autumn to apply sulphur as soon as the mildew is discovered, the pest may be completely eradicated before spring propagation commences. The liability of these plants to suffer from mildew has caused many to give up their cultivation, yet they are more continuous in their blooming and less objectionably formal than many bedding subjects that have taken their place, with the additional advantage that they are most useful for cutting all through the late summer months when flowers are not superabundant.

Indoor Fruit Department.

Vines.—All late Grapes should now be nearly ripe, and a dry air should be allowed to circulate freely about them when they have arrived at this state. Lady Downes, Alicante, Gros Guillaume, and nearly all late varieties improve considerably in flavour after they are, to all appearances, quite ripe. We have seen the last-named kind in fine condition lately, and where it succeeds well, it is a first-rate black late Grape. Lateral growths should now be cut off Vines of all descriptions; late rods, with plenty of healthy foliage, will still produce these shoots, but they must not be allowed to grow more than 1 in. or 2 in., and should then be removed. Be particular to keep Vineries clear of decayed leaves; if they be left lying about where ripe Grapes are hanging, they induce damp among the fruit. Vine wood, in both early and late houses, is fast becoming hard, and, where green sappy wood still exists, it should be ripened as quickly as possible, with the assistance of a little fire-heat at night and on dull days. Keep a little air on at the same time or the berries will shrivel in the close, warm atmosphere. Where the wood is shaded with a great quantity of leaves (and this is often the case with the leading shoots of young Vines), thin the largest of them out; do not break the leaf stalk close to the wood, but where it joins the leaf. The wood on early Vines should now be ripe and ready for pruning.

Pines.—Late varieties swelling fruit should have a night temperature of 70°. The second batch of Queens must now be gradually prepared for winter, and the atmospheric moisture about them should be reduced, especially during the day, and less water at the root should be given. Later plants, which were placed in their fruiting pots in June, must still be kept growing. Bottom-heat is not of so much importance to these as a bracing atmosphere; and all kinds of shading should be removed without delay. The last of the suckers must now be taken off and potted; they do not root freely or winter well when potted later on. No shading should be used in protecting them from the sun when rooting; the hardier they can be grown the better; 5-in. pots are large enough for these late suckers. Any late Queens which may be in fruit should be ripened speedily, as high flavour is never induced in November or December.

Hardy Fruit.

Peaches.—In damp localities, where there is a difficulty in getting the wood of Peach trees to ripen on open walls, it becomes necessary to give them every assistance possible. In such places the shoots should be kept much thinner than is requisite in more favourable situations, so as to allow the sun to get to them; they should also be kept closely nailed in so that they may receive the full benefit to be derived from the heat of the bricks. Shoots nailed in now will mature their buds much better than if they are allowed to stand away from the wall. These remarks do not of course apply to the southern counties, where the wood will ripen under almost any conditions; but in parts of the kingdom where the Peach can only just finish its wood, in ordinary seasons, it sometimes happens that the shoots are left detached from the wall under the impression that the buds are matured by the extra air they get in such a position. In this respect, however, the influence of the heat derived from absolute contact with the face of the wall is much greater.

Strawberry Ground should now be cleared, all the runners being cut away and removed to the refuse heap; but, in doing this, the old mistaken practice of cutting off a large portion of the leaves should by no means be followed, for, whilst they retain any vitality, they continue to impart strength to the crowns, and, when dead, they afford a natural protection to them through the winter. After clearing away all the runners, let the ground be well hoed, and the weeds (if any exist) raked off, care being taken not to remove any soil with them. This often happens where a negligent, careless system of gardening is followed and weeds are allowed to attain a large size, and is always damaging, but especially so amongst surface-rooting plants, such as Strawberries. A good thick mulching of littery manure applied in spring to Strawberry beds is most beneficial in its effects in keeping down weeds. Where fresh plantations are required, and the land did not happen to be at liberty in August—the best time for planting—rooted runners may now be taken up and planted, 6 in. apart, on a piece of ground previously prepared by digging. These can remain thus for the winter, and be removed in spring to the positions which they are to occupy permanently.

Kitchen Garden.

In most gardens at this season there are usually numbers of spare pits or frames, some of which should now be prepared for Lettuce and Endive, so as to have a supply under cover in the event of sharp frosts occurring in October or November. Pits which have been used for Cucumbers or Melons, if the manure is not immediately required for digging in the land, will require to have the soil on the top thoroughly stirred, all roots taken out, and, if dry, moistened, so as to have it in a thoroughly healthy growing condition. In thus making provision for autumn and early winter salads, every one, of course, must be guided by the demand they will have to meet. It is advisable, however, in planting a pit of several lights to select plants of different ages and sizes, for the sake of the successional character such a mode of planting will give—thus a light or more may be planted with half-grown plants that have been once transplanted, and the remaining space filled with the smaller and later sown plants. It will be found a better plan to plant now, where they can easily be protected when necessary, half-grown plants (as the check giving in moving them will be an advantage rather than otherwise) than to wait, as is commonly done, till frost is apprehended, and then hastily taken up large full-grown Lettuces, and stow them away thickly in frames, where the most careful management often fails to preserve in them that full flavour and succulency generally observable in plants that retain all their roots until they are required for use. I should, however, say that Endive is much more manageable in this respect than Lettuce. As regards varieties of Lettuces for winter, the Bath Cos should always be one of the varieties grown, and the Tom Thumb Cabbage, owing to its excellent flavour and quick growth, is also a very useful variety. Referring again for a moment to the question of transplanting: since the recent copious rainfall very rapid growth is observable in all kinds of green crops, and a certain grossness of over-luxuriance is not unlikely to take place, which will make them less able to stand a cold winter. This tendency can at any time be checked by partially lifting each plant with a steel fork; and wherever Broccoli are planted too thickly, half the plants may be lifted to form another plantation, and probably the transplanted plants will turn out the most satisfactory crop. There is no occasion to use any protection to Lettuce in frames at present; give them all the air possible, and it would be as well to have stored somewhere a quantity of dry wood ashes, or dry dusty peat, to scatter round and amongst the plants when the short damp days arrive, to counteract any tendency to damp or mildew. Mustard and Cress should be sown under hand-lights during the present month, after which it will be as well to sow in boxes in a warm house or pit.

Turnips.—These sown about the beginning of August are an important crop, as upon them principally depends the winter supply; when sown earlier it is difficult, in many parts of the kingdom, to preserve the young plants from the Turnip beetle. To get a satisfactory return from these late sowings it is absolutely necessary to allow them plenty of room by thinning sufficiently and in time. At this season they make larger tops than earlier, and, unless given space enough, they will not make roots of a useful size. Where the first thinning was insufficient they should at once be again gone over and more pulled out; a space of 15 in. between the plants every way is not too much.

Spinach.—A little more winter Spinach should now be sown at once on a dry piece of ground, and will come in for use in the spring. This late sowing will not have a disposition to run so soon to seed as that put in at an earlier period. It is a good plan to go over the rows, and to partly thin them out, leaving the plants so that they will not become drawn; and to complete the thinning by removing more as they are required for use. Ultimately, those that are left should be about 6 in. asunder. This vegetable, like all others, cannot stand a severe winter when crowded. This method of partial thinning admits of a supply both for the present and future time being supplied from the same ground. Whenever an opportunity is offered by the land being dry, let the entire surface, where there is room amongst growing crops, be gone over with the hoe and well stirred, in order to destroy the weeds. This saves much labour, by preventing the seeding of such annuals as Groundsel, Chickweed, &c., which will otherwise keep on flowering and maturing seed to the end of the year. It also has the best possible influence upon the present crops, and upon the land, by keeping it more open for the winter; but, in order to effect the greatest amount of good, the soil should be quite dry when stirred.

Carrots, especially the Horn varieties, will, in most places, be ready for pulling. A dry day should be chosen for the work, the tops being cut off as it proceeds, and the roots, being allowed to remain on the ground, exposed for a few hours to the sun. They should then be put in an airy shed for a short time until they have discharged a portion of the moisture which they contain, but not so as to cause them to shrivel. After this they should be stored in thin layers in moderately dry coal ashes, which should lie beneath and surround each separate layer and cover the whole. The previous exposure to the sun and air in open quarters or in a shed is necessary to prevent fermentation, which would otherwise be apt to occur.

Extracts from my Diary.

September 23.—Potting Humea elegans, Coleus, and scented-leaved Pelargoniums. Filling up all frames and cold pits as they become empty with Lettuces and Endive. Planting early border with August-sown Cabbage plants. Cutting turf to stack away for potting purposes. Hand-weeding Strawberry quarters, and cutting off all runners, afterwards mulching the ground with well-rotted manure.

Sept. 24.—Sowing Mustard and Cress for succession. Taking up Alternantheras and potting them; also a few Coleus for stock. Removing all cuttings struck in heat to a cold frame to harden. Giving first-spawned Mushroom bed a little warm water. Pricking out on a large border Carters' Hartwell Early Marrow Cabbage plants to stand the winter. Watering Pine-apples with manure water; also late Peas, Cauliflowers, and Celery.

Sept. 25.—Potting variegated Ivy and a few Carnations. Rearranging Fernery. Earthing up French Beans in pots. Lifting a portion of the main crop of Carrots and stacking them away in dry sand in an open shed. Moving pot Vines out of pits and placing them against a south wall, to finish the ripening of the wood and fruit buds. Examining all fresh-planted shrubs and putting a few stakes and ties to those likely to be injured by wind. Turning manure for Mushrooms, and salting terrace walks. Gathering Louise Bonne of Jersey and Marie Louise Pears; also Wormsley Pippin Apples.

Sept. 26.—Taking up plants of Mesembryanthemum cordifolium and potting them for stock. Giving a top-dressing of soil to Cucumber beds. Storing away Caladiums on dry shelves. Earthing up Celery. Clipping hedges, and cleaning shrubbery borders. Gathering Coe's Golden Drop Plums and Barrington Peaches; also Ribston Pippin and Cornish Gilliflower Apples; and Flemish Beauty and Brown Beurré Pears.

Sept. 27.—Potting double white Primulas, Cinerarias, and Solanum capsicastrum. Clearing off a piece of Turnips, and manuring and digging the ground for other crops. Transplanting Early White Naples and Giant White Tripoli Onions. Gathering all unripe Tomatoes, and hanging them up in Vineries in a sunny position to finish ripening; also picking Cucumbers, Button Mushrooms, Cauliflowers, hard White Cabbage, and Capsicums for pickling.

Sept. 28.—Potting Hyacinths and Tulips; also Osborn's early-forcing French Beans. Taking up and potting Mrs. Pollock and Tom Thumb Pelargoniums. Gathering Passe Colmar, Dunmore, and Doyenné du Comice Pears; also Lucombe's Seedling, Court of Wick, and Cockle Pippin Apples. Fruit in use for dessert—Pine-apples, Grapes, Peaches, Plums, Pears, and Apples.—W. G. P., *Dorset.*

GARDEN BOTANY.

(Continued from p. 250.)

Simple Fruits having a Dry Pericarp.—Fruits of this class are primarily divisible into dehiscent and indehiscent. The latter present fewer modifications, so we will treat of them first.

The Achene.—A term applied to any dry, one-seeded, indehiscent fruit, or dry, one-seeded carpel of an apocarpous fruit. From this definition it will be seen that an achene sometimes means an entire fruit, sometimes a single carpel of an apocarpous fruit; but the important and constant character is, that it is always a dry (not fleshy) one-seeded body which does not split open to release the seed. The seed of an achene is either free from the pericarp, or the ripe seed and pericarp closely adhere. In the Dandelion (fig. 575) and most members of the Compositæ, the seed is adherent, and, as has already been mentioned, we sow the fruit, pericarp and seed, of such plants as Asters, Marigolds, Zinnias, &c. The fruit of the Marvel of Peru (Mirabilis jalapa—figs. 576 and 577) is an achene enclosed in the indurated perianth-tube, and the seed is adherent to the pericarp. Achenes with free seeds are also not uncommon. Thus, the fruit of a Buttercup and of a Meadow Rue (fig. 578) consists of a number of achenes crowded upon a small, short, conical receptacle; and in the Strawberry (fig. 579) the receptacle

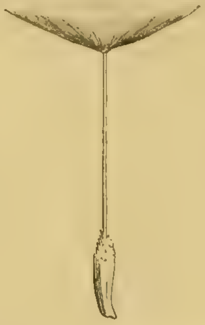


Fig. 575.—Fruit (achene) of Dandelion.

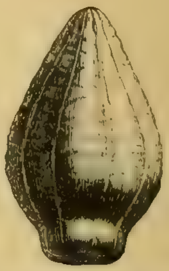


Fig. 576.—Fruit of Mirabilis jalapa; an achene enclosed in the indurated base of the perianth. Enlarged.

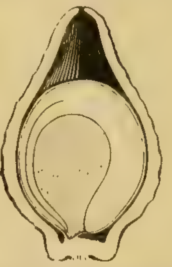


Fig. 577.—Longitudinal section of the fruit of Mirabilis jalapa, showing the single seed.

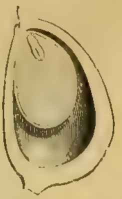


Fig. 578.—Section of a single carpe (achene) of Thalictrum (Meadow Rue), showing the solitary pendulous seed free from the pericarp.

grows into a large fleshy body, with the minute achenes scattered over its surface. The mature fruit of a Rose (fig. 580) very much resembles a miniature Apple, but on cutting it through vertically, we find that it is a hollow receptacle, in which are seated a number of achenes, as represented in fig. 581. The fruit of a Calycanthus (figs. 582 and 583) is of a similar nature.

The Follicle.—When the separate carpels of an apocarpous pistil are dry and contain more than one seed, they commonly debisce down the inner or central suture, and are then termed follicles. The fruit of the Columbine and of the Larkspur (fig. 584) is follicular, as well as that of the tropical genus Sterculia (fig. 585).

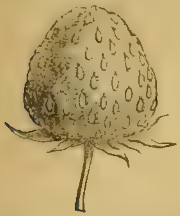


Fig. 579.—Fruit of Strawberry, consisting of a number of achenes on a fleshy receptacle.

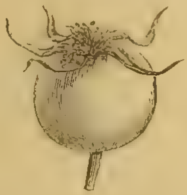


Fig. 580.—Fruit of a Rose.

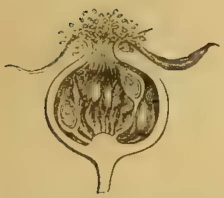


Fig. 581.—Section of a fruit of a Rose; one-seeded achenes in a persistent fleshy receptacle.

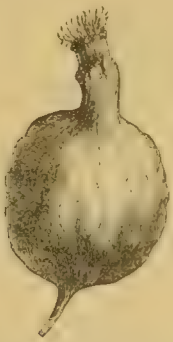


Fig. 582.—Fruit of Calycanthus, consisting of a number of one-seeded carpels (achenes) crowded together in a hollow receptacle.

The Legume.—This is the name given to the pod of the Leguminosæ (Pea, Bean, Vetch, &c.). It closely resembles a follicle, but it dehisces along both sutures, and there is never more than one in a fruit proceeding from one flower. Acacia (fig. 586) belongs to the same family.

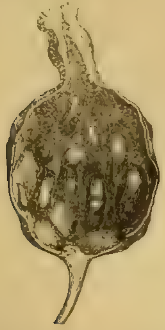


Fig. 583.—Longitudinal section of the fruit of Calycanthus, showing the free carpels.

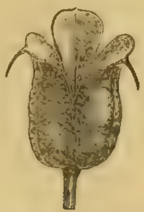


Fig. 584.—Fruit of Delphinium, consisting of three many-seeded free carpels, called follicles.

The Siliqua.—The pod of the Cruciferæ (ex., Stock, fig. 587, Radish, Turnip, Cabbage, &c.) is called a siliqua. This differs from a legume in the valves dehiscing from a framework to which the seeds are attached along both sutures, and in other particulars. It is more fully described in one of the paragraphs relating to the gynœcium. When it is as broad or broader than long, as in the Shepherd's Purse, it is termed a silicula.

The Samara.—A name given to winged fruits, like those of the Maples and Sycamore (fig. 588), and sometimes applied to the fruit of the Elm (fig. 589), which has a circular wing. Other botanists restrict the application of the term to the halves into which such fruits as that of the Sycamore eventually split.

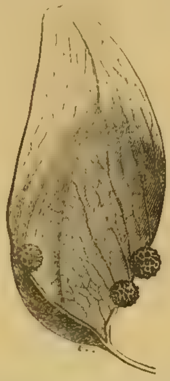


Fig. 585.—One follicle of a fruit of Sterculia platanifolia, dehiscing on the inner side, where the seeds are attached.

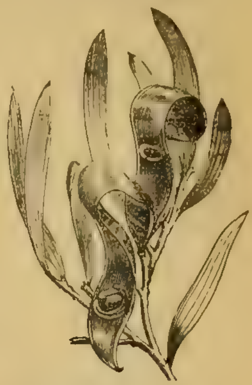


Fig. 586.—Fruit (legume) of an Acacia (Leguminosæ), dehiscing into two valves, each bearing one row of seeds, along the upper margin.

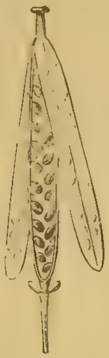


Fig. 587.—Capsule (siliqua) of Stock, showing the two valves dehiscing from below upwards, and leaving the seeds attached to the framework (replum).

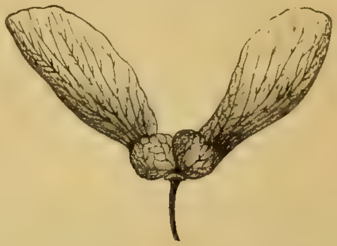


Fig. 588.—Fruit (samara) of Sycamore.

The Capsule.—This includes a great variety of dry, dehiscent seed vessels, characterised by the manner in which they dehisce, the number of cells they contain, and other particulars. From the more striking modifications we select the following: The capsule of a Tulip (fig. 590), when ripe, opens by three longi-

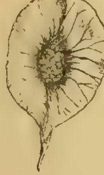


Fig. 89.—Fruit (samara) of Elm.

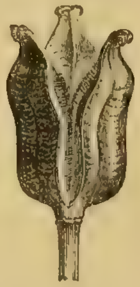


Fig. 590.—Three-celled capsular frui of Tulip, dehiscing loculicidally, or through the back of the cells.

tudinal slits, each slit being down the back of a cell and midway between the walls. This kind of dehiscence is termed loculicidal, because the cells themselves open. It will be better understood by comparison with Flindersia (fig. 591). In this the capsule, which is five-celled, splits into five parts between the cell walls, so that each part resembles a follicle of an apocarpous fruit. The fissures being between the walls of the cells, leaving the cells themselves intact, this kind of dehiscence has been called septicidal, literally partition-splitting. Each valve or portion of the opened capsule of a Tulip bears the partition of two contiguous cells down the centre, and consists, therefore, of portions of two cells or carpels, whereas in septicidal dehiscence each portion is an independent carpel or cell. The dehiscence of the capsule of Convolvulus is also longitudinal (fig. 594). The capsule is three-celled, and the outer wall falls away in three valves, leaving the partitions of the cells attached to the axis or centre. This mode of dehiscence is termed septifragal, literally breaking from the partitions. The capsule of the Thorn Apple is another familiar example of septifragal dehiscence. In all three of these modes of dehiscence, the placentation or attachment of the seeds is axile or central. When the placentation is parietal the axis is not produced above the base of the ovary, which remains one-celled, except the placentas grow inwards and meet in the centre. The dehiscence is usually longitudinal, as in the Violet (fig. 595), which splits into as many valves as there are placentas, each valve bearing a placenta. The capsule of Hypericum hircinum (fig. 597) offers a singular mode of dehiscence, the outer wall falling away in three valves, leaving the three placentas attached to the axis. In Orchids the placentation is parietal, there being three placentas in each capsule, which, however splits longitudinally into six pieces, the alternate ones only bearing seeds.

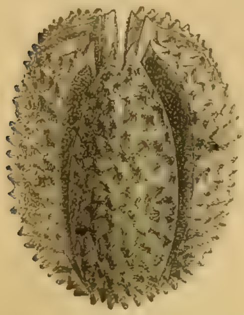


Fig. 591.—Fruit of Flindersia, showing septicidal dehiscence, *i.e.*, between the walls of the cells.

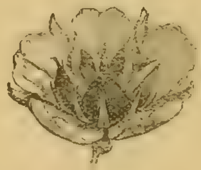


Fig. 592.—Fruit of Lancretia, dehiscing septicidally.

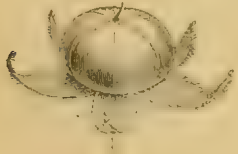


Fig. 593.—Capsular fruit of Convolvulus.

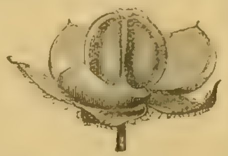


Fig. 594.—Capsule of Convolvulus, just as the three valves are falling away and revealing the three cells with the seeds attached to the axis.

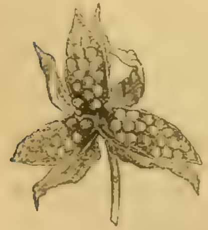


Fig. 595.—One-celled fruit of Violet, with the seeds arranged on three parietal placentas, and dehiscing into as many valves.

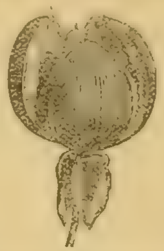


Fig. 596.—Fruit of Hypericum hircinum.

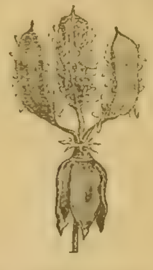


Fig. 597.—Fruit of Hypericum, from which the valves have fallen away, leaving the placentas covered with seeds.

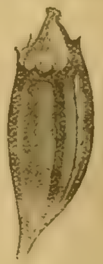


Fig. 598.—Fruit of an Orchid.

Fig. 598 does not very clearly illustrate this point. Many capsules open only at the apex, as Chickweed (Stellaria media—fig. 599) and many others of the same Natural Order. In splitting open the top of the capsule parts into as many, or twice as many, small teeth as there are styles. Mignonette offers a familiar example of this mode of dehiscense, the capsule opening long before the seeds are ripe. All the foregoing modifications of dehiscence are longitudinal. In a comparatively small number of instances it is transverse, as in the one-celled capsule of the Pimpernel, and in the two-celled capsule of Henbane (Hyoscyamus niger—figs. 600 and 601). The top separates from the lower part like a lid. Another mode of dehiscence is by pores, as in Antirrhinum, Campanula, and Poppy (fig. 602). W. B. Hemsley.

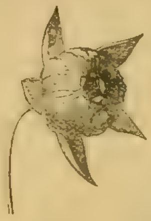


Fig. 599.—Fruit of Stellaria media, a capsule dehiscing at the top into six valves.

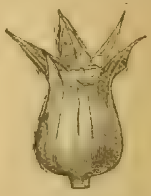


Fig. 600.—Capsule of Hyoscyamus niger, enclosed in the persistent calyx

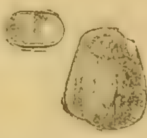


Fig. 601.—Capsule of Hyoscyamus removed from the calyx, and showing the transverse dehiscence near the top; the cap (operculum) at the side.

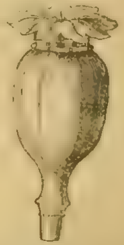


Fig. 602.—Fruit of Poppy, dehiscing by small pores beneath the cap-like top.

The Old White Brugmansia as a Tub Plant.—Among the plants stored away in cellars in tubs and flowered out-of-doors on terraces and other sunny places in summer, perhaps the most valuable is this old and somewhat neglected plant. It is much grown in Switzerland in tubs, and has lately been covered with its white trumpets, affording a charming effect. This plant is better worth growing in the way alluded to than most others treated in the same manner. Light is not at all essential to it during the winter, and, therefore, it may be grown where there is little or no glass. Some of the plants alluded to seem very old, and have, no doubt, spent many winters in cellars.—V.

THE KITCHEN GARDEN.

TRANSPLANTING AUTUMN-SOWN ONIONS.

Some years ago it was the general practice not to sow the seed of autumn Onions before August 12 or 15. At that time it was thought that early sowing was fatal to the development of fine bulbs, or, to use a common phrase, that they were sure to bolt in bulbing, which sometimes happens, but autumn transplanting prevents, to a great extent, such an occurrence. Early sowing and spring planting contributed in a great degree to the plants running to seed. My attention was first directed to this matter in 1870. Most people will recollect how severe the frost was that year, and how disastrous it was to vegetation generally. My winter Onions that year were rather thickly sown, but otherwise they looked strong and healthy, and I calculated that when planting time came round in the spring I should have far more than would be required; but, alas! not a living plant was left. I blamed myself for neglecting to thin out the seedlings, and resolved that in future there should be more pains taken with seed beds which had to stand over the winter. On paying a visit to a neighbour a few days afterwards, I noticed that a brake of Onions planted out during the previous autumn had escaped unhurt, whilst the plants in the seed beds from which they were taken were sadly cut up, although the latter were in a sheltered corner, whilst the former were planted in an exposed part of the garden. The reason was manifest, and the lesson thus taught has been acted upon ever since. I make two sowings, one about the beginning of October, and the result is I have never had a failure since. An exposed plot of rich ground is selected, which has been heavily manured the previous spring; this is dug over one spade deep without adding any fresh manure, and after the surface of the ground is made firm by trampling on it, lines are drawn and planting is commenced. There is no greater mistake than that of coddling up young plants in seed beds; owing to their being crammed together their leaves are necessarily soft and tender and liable to be injured by frost, whereas the case is wholly different when they are sown in good time and fit to be planted out in their permanent quarters in autumn; they furnish themselves with an extra supply of roots through the check received through transplanting, and become firm and hardened by exposure to the action of the weather.

J. Groom.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

New American Potatoes.—Four new American Potatoes were put into commerce this year. Beauty of Hebron is a pale-skinned Rose, the tint being a very pale pink, but in all other respects it seems to be a Rose only, and gives nothing of any appreciable value as a market or table kind. Trophy, a new red Kidney of the same colour as Ruby, is rich red, with rosy eyes; tubers large and handsome, and produced in great abundance; flesh white, but not first-rate. This produced a grand crop this year, and far excelled all other American kinds. It is later and much more robust than Ruby; that kind is too dwarf and early, for coloured kinds are not so valuable early as late. Should Trophy retain its present form, it will outclass all the other coloured American Kidneys. Triumph is a very handsome, rich-coloured Round, with very white flesh. Whatever may be the merits of this kind this year, it is small, too small, but evidently very productive. As the best crops from America invariably come from the first seed, I scarcely expect that this kind will hold a place with us for any time. Burbank's Seedling is a large, coarse, white Kidney, deep-eyed, and ungainly when grown strong, but on medium ground it produces tubers much like those of Magnum Bonum. I think the latter, in spite of its rank haulm, is, however, preferable. An older American kind, Centennial, produces tubers the exact form and colour of Flourball; and I think it would be difficult to distinguish one from the other. Manhattan gives large purplish tubers, that bear a close resemblance to the old Farmer's Glory. Out of the fifty or more American kinds imported here, not more than half-a-dozen seem to hold their own for any time.—A. D.

New Potatoes in Autumn.—Why should we not have new Potatoes in autumn? I have tried the experiment this season, and am quite satisfied with the results. The variety planted was Myatt's Early Ashleaf. In spring I kept rubbing the buds off a limited number of tubers, which were also retarded as much as possible by being kept in a cool place and laid out singly. The buds were rubbed off them up to within a short time of planting, when they were allowed to grow to from 1 in. to 2 in. in length. The planting was done early in June, on the same border from which the early crop was taken. It was in no way prepared, beyond adding a little leaf mould on which to lay the seed when the drills were drawn. Potatoes, I have always observed, turn out white and clean when there is a slight layer of leaf mould placed under and above them. The drills were drawn in an oblique direction, as the border is a south one, and thus the side of the drill was fully exposed to the warmth of the sun. The crop is now becoming fit for use, and promises to be in every respect satisfactory. The haulm is of course weak, consequent on the shoots being rubbed away so often, but the tubers are a fair size, well formed, and of excellent quality. They will not be ready for lifting for some time yet, and when they are a portion will be laid in sand, where they will keep clean and fresh for a further period. By making one or two plantings from the beginning of June to July a succession of young Potatoes might be kept up to Christmas.—W. Hinds.

Vick's Criterion Tomato.—This Tomato, recently sent out by Messrs. Carter, is one of the best croppers amongst a large collection at Chiswick. Its fruit is of medium size, very regular, and of fine form and flavour. At Chiswick the back wall of a long house is covered with Tomatoes of various kinds, and the quantity of fruit gathered from them is astonishing. At the present time there is a good crop, although the plants have been in bearing all through the summer.—S.

Spade Culture Best (p. 148).—In the Eastern Counties one might find endless cases fully illustrating the superiority of spade culture over that done by the plough. Fields hitherto comparatively barren, from which portions have been taken for cottage gardens, soon become most productive. It is not the abundance of manure that favours the cottager, for, as a rule, the amount used in such plots is but small. No; it is deeper cultivation, and confining the producing powers of the land to useful crops instead of weeds. Turning poor soil up deeply is not a profitable investment at first, but by gradually increasing the depth by means of deeper digging each succeeding year, a more productive soil will in time be obtained, and whether excessively wet or dry will be less liable to adversely affect the crop; for providing a deep root-run is the best safeguard against drought, and a ready means of exit is at the same time provided for superabundant falls of rain.—J. Groom.

The Potato Disease.—The excessive drought which we experienced in July not only arrested the growth of the Potato crop, but, for a time, stayed the effects of the disease; but the heavy thunderstorms and downpours of rain which we had in August have caused it to break out afresh in its severest form.—J. G.

Early Peas for Late Crops.—When green Peas are wanted late in summer various expedients are resorted to in order to obtain them, one of which is sowing the very earliest varieties, such as Ringleader or Sangster's No. 1, after the crops of tall Marrows are exhausted. From experience, however, I do not much like the practice, as by making good preparation for the latest sowings of tall Peas, such as Ne Plus Ultra or Champion of England, I have invariably had them in bearing as long as the weather would permit the pods to swell satisfactorily, and in moist summers I have frequently had all the sowings made after the middle of May continue prolific until frost finished their career. Another point of importance is that most people like the late varieties better than the earliest ones, which are simply prized for that quality alone. For all late or main crops wide trenches should be taken out and well manured, and by mulching the roots, and keeping them well supplied with water during times of drought, the varieties named will prove abundant and continuous bearers.—J. Groom.

Keeping Onions.—The way (strongly recommended by Mr. Baines some time ago in The Garden) of keeping Onions by hanging them under the eaves of cottages and out-houses is extensively practised in some parts of Central Europe. Sometimes there the hanks assume the form of large rings, somewhat like, in fact, gigantic Immortelles.

Bossin Cabbage Lettuce.—This variety was found to stand best among the large number of others tried at Chiswick this season, and it was singular to note that while heads of all other varieties had bolted off to seed, the Bossin was as unbroken as when it was hearting in. It is not a taking-looking Lettuce, being somewhat large and coarse-looking, with brownish, tinted-fringed leaves. Of its standing qualities there can be no doubt, and, after all, it is the inside of a Lettuce that salad eaters are most concerned about.—"Gardeners' Chronicle."

Showing and Storing Potatoes.—Mr. Peter M'Kinlay, the well-known grower and exhibitor of Potatoes, who has 600 varieties under cultivation in his garden at Beckenham, stores his best samples in a large airy outbuilding, lined with tiers of small wooden bins ranged one above the other, but open at the top, each one holding about half a bushel of Potatoes. Covered up with dry sawdust, they remain clean and fresh until required for the show table. The bins are subsequently used for storing the various sorts for seed.

COCORITE PALMS IN TRINIDAD.

“At last, striking into a broader trace which came from the westward, we found ourselves some 600 ft. or 800 ft. above the sea, in scenery still like a magnified Clovelly, but amid a vegetation which—how can I describe? Suffice it to say, that right and left of the path, and arching together overhead, rose a natural avenue of Cocorite Palms (Maximiliana), beneath whose shade I rode for miles, enjoying the fresh trade wind, and the perfume of the Vanilla flowers. We stopped at one point, silent with delight and awe. Through an arch of Cocorite boughs—ah, that English painters would go to paint such pictures, set in such natural frames!—we saw, nearly 1000 ft. below us, the little bay of Fillette. The height of the horizon line told us how high we were ourselves; for the blue of the Caribbean Sea rose far above a point which stretched out on our right, covered with noble wood; while the dark Olive cliffs along its base were gnawed by snowy surf. On our left, the nearer mountain woods rushed into the sea, cutting off the view; and under our very feet, in the centre of an amphitheatre of wood, as the eye of the whole picture, was a group—such as I cannot hope to see again. Out of a group of scarlet Bois Immortelles rose three Palmistes, and close to them a single Balata, whose height I hardly dare to estimate. So tall they were, that though they were perhaps 1000 ft. below us, they stood out against the blue sea, far up toward the horizon line; the central Palm 150 ft. at least, the two others, as we guessed, 120 ft. or more. Their stems were perfectly straight and motionless, while their dark crowns, even at that distance, could be seen to toss and rage impatiently before the rush of the strong trade-wind. The black glossy head of the Balata, almost as high aloft as they, threw off sheets of spangled light, which mingled with the spangles of the waves; and, above the tree tops, as if poised in a blue hazy sky, one tiny white sail danced before the breeze. The whole scene swam in soft sea air; and such combined grandeur and delicacy of form and colour I never beheld before.” Such is Canon Kingsley's account, in “At Last,” of this beautiful bay in the Island of Trinidad.

The Bay of Fillette, seen through Cocorite Palms.

HOME-GROWN *v.* IMPORTED PLANTS AND SEEDS.

That we are gradually shaking off a notion once conceived that imported plants and seeds are superior to those of home growth must, I think, be apparent to everybody. There could not be more conclusive evidence than that afforded by the fact that while new establishments are continually springing up, the older ones are not only enlarging the area devoted to production, but many of the largest have already special branch nurseries for each particular department, an arrangement by means of which the very best soils and situations are secured for the fruit and forest tree department, the Rose nursery, or the seed farm or trial ground, while others devote large areas to hardy bulbs and herbaceous and Alpine plants. And as to the extent of such branches, it may truly be said that the demand creates the supply; for, whereas but a few years back it was impossible to find many really good old plants, except in botanic gardens, now we have only to visit an establishment devoted to this branch of trade to find them in abundance; while Lilies and similar bulbs that were but recently mostly procured from the Continent may now be seen delighting the eye with their gorgeous colours by the acre. Again, as regards trees of stately growth, or such as are adapted for street planting or avenues, it is but a short time since such specimens as those planted on the Thames Embankment had to be procured from the Continent; but now they can be had almost on the spot. In Messrs. Veitch's nursery at Southfield, Fulham, I recently saw thousands of as perfect specimens of such trees as it would be possible to find anywhere with clear stems bearing fine heads of luxuriant foliage. Such trees, lifted and replanted in any part of the metropolis or suburbs in the same day, would surely be preferable to trees exposed during a long journey by land and sea. Planes, Elms, and Acacias are all equally good; and here, too, were Ivies by the thousand, plants each of which would at once cover 3 ft. wide of a wall 10 ft. or 12 ft. high. Fruit trees I also noticed under every form of training, from the simple cordon to the most complicated design. As regards Roses, the demand seems to outrun the supply, although so many growers devote their attention exclusively to the Rose. Gloire de Dijon and Maréchal Niel appear still to be the greatest favourites. Some new kinds of Roses, it is true, still come from France, but English raised sorts now equal in every respect those of foreign origin. As regards hard-wooded plants, such as Camellias, Azaleas, Heaths, Epacrises, &c., those who have been supplied with home-grown plants need no further recommendation, as respects their merits, than the success that has attended their exhibition in the form of specimens at public shows. At Messrs. Rollisson's may now be seen immense numbers of this class of plant, not shaded or brought up tenderly, but set on wide breadths of coal-ashes, and receiving abundant supplies of soft water from a pond close by, in which Water Lilies and other aquatics grow and flower profusely. Under this treatment Heaths, Epacrises, &c., grow most luxuriantly. It is questionable whether we do not, as a rule, shade plants grown in pots too much, as it is a well known fact that well-ripened wood produces the largest amount of flowers; therefore to set plants of this kind in almost perpetual shade is doubtless a mistake, as even when cases of leaf scorching occur they may be as much owing to the weakly growth imparted to the plant by excessive coddling as to its natural inability to withstand the sun's rays. It is, however, in reference to plants of a bulbous character that we have been so long accustomed to look to the Continent for supplies; but of these we can now grow many in this country. True, we cannot equal Haarlem in Hyacinths, Tulips, and others, but that Lily of the Valley and similar plants may be grown in perfection at home I feel confident. To do even this, however, successfully, some attention will be required. It is but quite recently that the dormant season, when all visible outward growth is at an end, was looked upon as being a time when it was of no consequence what kind of treatment such plants received; but we now frankly acknowledge that there is no such thing as a dormant or entirely stagnant period amongst plants. Bulb life, from beginning to end, is one continued round of progress; the fading leaf only indicates the finish of one chapter, so to speak, in its existence and the commencement of another. It is, therefore, clear that we should not treat bulbs at any season as if they were inanimate objects. As to flower seeds, it is quite possible to ripen seeds of Stocks, Asters, and similar plants in this country to equal the best Continental-saved seeds of these flowers. Travellers by the Great Eastern Railway must have observed the brilliant effect produced by the flower seed farms in Essex, where annuals and biennials form splendid masses of colour, and in the ordinarily dry atmosphere of the eastern counties their seeds ripen thoroughly. Amongst occupants of the kitchen garden, some notable examples might be enumerated; if we take Brussels Sprouts as an illustration, we find just as good produce from home-saved seed as from that imported from Brussels. Other examples might be enumerated, but perhaps the best way of removing any deeply-rooted prejudice in such matters is to constantly show plants raised from home-grown seeds at horticultural exhibitions. J. Groom.

ANSWERS TO CORRESPONDENTS.

Striking Rose Cuttings.—Can I strike Rose cuttings in a conservatory? They have failed with me for two years outside.—Subscriber. [You might be able to strike Rose cuttings in pots or boxes in the conservatory, but there is no reason why they should fail outside, if properly treated. The cuttings should consist of pieces of half-ripened wood, taken off with a "heel." Insert them at once on a north border, which is well drained, adding to the soil a large quantity of road sand. Tread the soil firmly round the cuttings, and, if you be at all fortunate, you ought to get at least 40 per cent. to strike.—W.]

Mandevilla suaveolens.—How should this greenhouse creeper be treated? Mine grows well, but does not bloom, and many of the leaves are spotted with red. It has had rather a high temperature until lately; now no fire-heat is used and it has plenty of air.—H. [Your plant is probably infested with red spider through being kept too hot and close during the early stages of its growth. Early in spring the young shoots should be thinned out, selecting the weakly ones for removal, otherwise they become so crowded and entangled that nothing can be done with them, and if the house be kept hot and close the leaves never acquire sufficient substance to resist insect attack, or to insure a floriferous habit. All that can be done with your plant now is to clean it thoroughly by syringing or sponging with some insecticide. In future continue, if possible, to give more ventilation; from May 1 leave a little air on all night if possible.—E. H.]

Culture of Filberts.—Can you kindly give me some information as to the cultivation of Filberts?—F. G. [The following is the practice in some parts of Kent: The trees when young are cut back to within 1 ft. of the ground, which causes them to emit side shoots, which are regularly trained outwards by being tied to a wire or wooden hoop, which is placed in the centre, so as to give the tree a cup-like form. This is a capital method, inasmuch as it allows the sun to shine in the centre as well as all round the trees, and thus the wood gets well ripened, a condition indispensable to the production of large crops of Nuts. Nut trees are, as a rule, to be found alternately planted with standard Apple or Pear trees. In height they are seldom allowed to exceed 6 ft., severe pruning being yearly resorted to in order to keep them within bounds. Many of the established bushes are 15 ft. in diameter at the top, and are as flat as a table, and a crop of Nuts is generally to be depended upon.—S.]

Melons in Brick Pits.—Can I grow Melons and Cucumbers successfully in a common brick pit heated by means of a brick flue? and if so, what are the conditions needful? Should the flue be level with the border, above or below it? Must the bottom-heat be supplied by manure? or will a hollow chamber with the flue running through it answer? I have had two pits in use for years, one with the flue running along one end and along the front, the other with a hollow chamber with the flue running down the centre, and drain pipes as chimnies to give top heat, but neither of these answer well. Of course I know that hot water is best, but it does not suit me in this case to use it. My furnaces are sunk well down below the borders.—Inquirer. [Fermenting leaves and manure are infinitely better for supplying bottom-heat than anything else. If you were to erect a stage over the flue on which you could place from 12 in. to 20 in. deep of soil, there is no reason why you could not grow good Melons and Cucumbers; but the atmosphere of the pit must be kept very moist. During summer you could grow both Cucumbers and Melons without the aid of bottom-heat.—H.]

Painting Trees with Gas Tar.—Will painting the stems of trees with gas tar, to protect them from horses or cattle, be injurious to the trees? I should imagine that it would stop the pores, and so injure the growth.—J. G. [Gas tar put on the stems of trees would, we fear, prove injurious to them. A mixture of soot, lime, and cow manure would be equally effective in keeping off cattle, and would do no injury to the trees.—B.

Asparagus Beetle.—Kindly name the enclosed beetle, which eats my Asparagus.—R. H. [The Asparagus Beetle is Crioceris asparagi. Your best way of getting rid of the pest would be to make a fresh bed in another part of the garden. As to the present bed, when the stalks have died down give the ground a good dressing of salt. This, indeed, you might do at once.—S.]

Diseased Shallots.—I have grown what I hoped would have proved a good crop of Shallots, but they are not keeping well. They were pulled too early, I fear.—E. [The samples sent appear to have been lifted before they had done growing, and afterwards subjected to heavy rains or stored away whilst damp. In future leave them in the ground until the tops show signs of turning brown; then pull them up and place them thinly on a mat in the sun to dry. Managed thus they can be moved indoors during rainy weather.—S.]

Substitutes for the Potato.—I have been requested by some friends interested in allotment gardening to ask for advice respecting this matter. The uncertainty of the Potato crop in allotments is now such a serious thing, that we are anxious to find, if possible, what other keeping and storing vegetable can be best recommended to cottagers to replace entirely or partially the Potato.—Rector. [Jerusalem Artichokes have, by some, been recommended to be grown more largely as a substitute for the Potato, but without any good result. Carrots and Parsnips answer better. A change of seed Potatoes obtained from a distance, and from soil of a totally different character from that in your garden, has sometimes been tried with advantage.—H.]

Names of Fruits.—*T. B.*—Apparently Paradise d'Automne.

Names of Plants.—*Mrs. G. R.*—1, Eurya latifolia variegata; 2, Coprosma Baueriana variegata. *T.*—Both Fuchsias are forms of F. gracilis. *A. T.*—Oxalis Acetosella. *D.*—Spiræa callosa. *C. B.*—Euonymus latifolius; Eastern Europe. *E. D.*—1, Diplacus glutinosus; 4, Polygonum Brunonis; 2 and 3 next week.

Questions.

Maize as a Vegetable.—In the United States of America the tender ears of Maize are, I believe, much used and highly esteemed as a vegetable. Will any of your correspondents kindly inform me at what period of growth such ears should be gathered, and how they should be dressed?—Derwent.

Mildewed Grapes and Ferns.—The Grapes in my greenhouse have been terribly mildewed this year time after time, in spite of the use of black sulphur, and when about to change colour they cracked and became bad. Some Ferns under the stage were equally mildewed, the leaves being now more white than green. What must I do?—R. S. H.

Calochorti and Cyclobothras Out-of-doors.—I should be very much obliged if one of your correspondents would give me some information about the cultivation of Calochorti and Cyclobothras. I find that it is possible to grow them on a raised border in the open air; some few have done very well with me in that way, but the per centage of successes is so small when compared with that of failures, that I feel sure I have still a good deal to learn regarding them. A few hints would be very acceptable to me.—Henry Ewbank, *St. John's, Ryde, Isle of Wight.*

Lamp Heating.—In The Garden (p. 110) mention is made of heating a small greenhouse with paraffin. Would "J. G.," or some other contributor to The Garden, kindly tell me if the paraffin lamps to which he alludes can be simply burned in the greenhouse? or should they be used for heating water pipes? I was under the impression that the fumes from burning lamps would be injurious to the plants. I have a small cold greenhouse, in shape nearly half an octagon, its greatest dimensions being about 13 ft. by 6 ft. I want some heat in it, but am rather afraid of the expense of putting in pipes, and the necessary consumption of gas. Would the paraffin lamps give enough heat? I would be greatly obliged for any information on the subject, and as to the cost of lamps, consumption of oil, trouble of trimming, &c.—J. L.

Trees Difficult to Move.—I have always found the common evergreen Oak (Quercus Ilex) and the Hemlock Spruce (Abies canadensis) to be the most difficult trees to move successfully. I have now one of the former 15 ft. high and as much through, and one of the latter 18 ft. high and the same through, which, as they begin to interfere with a view, I must displace, but which, as handsome specimens, I wish to save. Can any of your readers oblige me by advising as to the best mode of proceeding? If preliminary trenching round be thought necessary, then I should be thankful for information as to the time of trenching, depth of trench, treatment, and time to elapse before moving, and also the best time of year for transplanting after preparation. The soil is a rather light sand.—Exempt.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

September 17.

The chief exhibits on this occasion consisted of florists' flowers, such as Dahlias, and there was also a good supply of fruit and vegetables.

First-class Certificates were awarded as follows:—

Dahlia Aurora (Keynes & Co.).—A medium-sized flower of good form, having small compact petals of a bright cinnamon colour, the centre being rich orange-scarlet.

D. Joseph Ashby (Turner).—A fine-built flower of a brilliant cinnabar-scarlet colour; very distinct.

D. Clara (Rawlings & Co.).—A purplish-rose-coloured flower, excellent as regards form.

D. Paragon (Cannell).—A strikingly pretty, single-flowered kind, having dark velvety maroon petals edged with purple and bright golden stamens.

D. lutea (Cannell).—A well-formed single flower, lemon-yellow in colour.

Nelumbium luteum (C. Green).—An ornamental-leaved plant, which succeeds well in a warm greenhouse tank.

Macrozamia cylindrica (Bull).—A beautiful Cycad, having gracefully-recurved fronds with long, deep, narrow, green pinnæ.

Begonia Nellie May (Society's Garden).—A free-growing kind, producing a profusion of large, soft rosy-pink flowers.

B. Louis Thibaut (Hooper & Co.).—A semi-double scarlet-flowered kind of a very bright description, compact and dwarf in habit.

Eulalia japonica zebrina (Laing & Co.).—A Grass with graceful, creamy-barred leaves, an illustration of which will be found in another column. It promises to be well adapted for isolation on lawns or in pleasure grounds. The plant shown, the largest we have yet seen, was planted out-of-doors in Messrs. Laing's nursery at Forest Hill in the month of March last year.

Mr. Wm. Bull, Chelsea, showed a group of new and rare plants, among which were several beautiful varieties of Odontoglossum, the cut-leaved Artocarpus exsculpta, Billbergia ascapa, finely in flower, and several graceful Palms. The same exhibitor also sent a group of plants of Lilium neilgherrense, which were admired for their fine creamy-coloured, trumpet shaped flowers and delicate perfume.

Dahlias.—These were shown in good condition from both Slough and Salisbury. In Mr. Turner's collection of seedling show varieties the best were Joseph Ashby, cinnabar-scarlet; Amy Robsart, a finely-formed flower of a bright violet colour; Prince Bismarck, dark magenta; and John Bennett, bright yellow, edged with scarlet. The same exhibitor also showed Canary, a fine, bold, golden-yellow flower, and George Thomson, a fine sulphur colour; Mrs. Saunders, lemon, conspicuously tipped with white, and Lady Golightly, white, delicately-tinted with violet. Thos. Goodwin was the best dark kind, being almost black, and James Service was remarkable for its fine form and regular outline. In the collection from Messrs. Keynes & Co. the best seedlings of show varieties were Rosy Morn, a fine, bold flower of a deep rose colour; Duke of Connaught, dark crimson; and Emily Edwards, a kind with fine, large, shell-shaped petals of a rich cream colour, delicately traced with violet. From the same exhibitors also came Barnaby Rudge, a greenish-yellow flower profusely striped and spotted with dark crimson and scarlet; Gaiety, a kind well named, its body colour being bright lemon, tipped with white, and splashed with bright scarlet and several shades of purple. Messrs. Rawlings Bros., Romford, showed several good seedling Dahlias, the best of which was Clara, elsewhere alluded to; the Rev. J. Goodday, dark maroon-crimson tinted with bright purple; and George Smith, a medium-sized well-formed flower of a bright magenta colour, were also promising kinds. Mr. G. Smith, Hedge Lane, Edmonton, likewise contributed several stands of Dahlias; and Mr. Cannell, Swanley, showed a stand of handsome Pompone Dahlias and blooms of single-flowered kinds, which attracted much attention.

Miscellaneous Subjects.—Messrs. Hooper & Co. sent from their Twickenham nurseries several very fine double and single-flowered Begonias, and from the Society's Garden at Chiswick came well-grown plants of B. Moonlight, one of the best white-flowered Begonias in cultivation; also a collection of Abutilons. Mr. Noble, of Bagshot, exhibited a dwarf free flowering variety of Gynerium argenteum named pumilum; also blooms of Rose Queen of Bedders. Mr. Cannell, Swanley, furnished a stand of Verbena blooms inserted in a carpet of Club Mosses, a good way of showing such flowers. Mr. Green, gardener to S. G. Macleay, Esq., Pendell, Blechingly, sent Gloxinia maculata bearing pyramidal spikes of large drooping blue flowers; also flowers of Costus speciosus. Mr. R. Dean showed remarkably large blooms of African Marigold, and finely-coloured French Marigolds came from Mr. Cannell.

Fruit and Vegetables.—Mr. Rivers, Sawbridgeworth, sent branches literally laden with fruit of several kinds of Plums, and to a new Pear, as yet unnamed, a first-class certificate was given. Several dessert Apples were contributed by different exhibitors. Mr. Walker, Thame, Oxon, showed specimens of Walker's Exhibition Onion, a very large kind, and finely ripened. Specimens of an Onion called Paragon, shown by Mr. Taplin, Uxbridge, were almost as large and fine as those of Spanish growth, to which this kind is very similar, both in shape and appearance. In competition for the prizes offered by Messrs. James Carter & Co., High Holborn, for twelve fruits of Vick's Criterion Tomatoes, ten dishes were shown. The first prize was awarded to Mr. R. Phillips, gardener to Capt. Jackson, The Deodars, Meopham, Kent; the second to Mr. C. Ross, gardener to C. Eyre, Esq., Welford Park, Newbury; and the third to Mr. W. Scott, Pembroke Cottage, Cambridge. Prizes were also offered by Messrs. Hooper & Co. for twelve fruits of Acme Tomato. Mr. A. Hopkins was awarded the first prize, and Mr. Miller, gardener to J. Friend, Esq., Northdown, Margate, the second. Both kinds of Tomatoes were shown in good condition, and they are very smooth-skinned, of fine shape, and well worth culture.

Begonia geranioides.—This is one of the best of all the dwarf Begonias. Its habit is compact and distinct, and its blooms, which are produced in great abundance, are of a fine white colour. This Begonia was sent out by Messrs. Backhouse, York, a great many years ago, but it is seldom met with even in gardens in which Begonias are grown, and for what reason I am unable to say. It is one of those good plants lost to sight, but to memory dear.—J. G.

Lasiandra macrantha purpurea.—This deserves attention on account of its purple-mauve colour, which is rich and striking, and also on account of its flowering freely during the autumn and winter months. It requires, however, a warm conservatory. It may be readily propagated by means of young growths inserted in sandy peat and plunged in a good strong bottom-heat. Being of rather a straggling habit, it requires some training in order to have good specimens of it, and if kept in quite cool quarters after it has made its principal summer growth, and returned to the stove about this season, good plants of it will supply a fine succession of blossoms during the greater part of the winter.—J. Groom.

Exhibiting Wild Flowers.—I was much pleased with the arrangement of a collection of wild flowers exhibited at Coventry on the 10th inst., consisting of twenty-four kinds; they were arranged on stands similar to those used for Carnations, and were made up into bunches with some of their own foliage, and all named with their English names. This I consider a step in the right direction. Many who would study our native plants give up the task in despair when confronted with the botanical names. Children, more especially, ought to be encouraged to bestow increased care in the arrangement and naming of wild flowers. In local exhibitions this does not often receive that attention which it deserves.—A. Hossack, *Ragley*.

Opening of Kew Gardens.—Sir Joseph Hooker seems stil disinclined to open Kew Gardens at an earlier hour. From Sir Joseph's point of view, the gardens could not be "maintained up to their present standard if the public were to be admitted at an earlier hour." We should like to know in what way the public would interfere with the proper management of the gardens. It appears that the morning hours are reserved in order that the staff may attend to their duties, and that scientific students and artists may prosecute their studies undisturbed. The easy answer to this is that visitors would not necessarily interfere with the workmen, and that the scientific students would be perfectly secure from molestation. Not a single case of wilful damage to the gardens has ever been brought before a police magistrate, and, as regards the students, their operations are generally confined to the museum and herbarium, which the general public does not enter. Nor would the latter do the students any harm. We can see, any day, in the British Museum or National Gallery, people pursuing their researches perfectly unembarrassed by any number of visitors. There is no reason to suppose that the case would be different at Kew Gardens. The fact is that the gardens are public property, and as such the public have a perfect right to visit them at all reasonable hours. The plea put forward for botanists and scientific men is rubbish. There are not twenty eminent botanists in England, and we should like to see a return of the genuine students for whose benefit public property is to be fenced off during the best part of the day. Sir Joseph's private objections are intelligible. For years Kew Gardens have formed a snug little preserve—a sort of happy hunting ground for the scientifically inclined members of the Hooker family. It is, doubtless, a little hard that the privileges so long enjoyed by the latter should have to give way, as they must, to public rights and convenience.—"Examiner."

Caterpillars and Dill.—A Hanoverian journal states that the steward of an estate in Hanover, having observed that one bed of Cabbages was left untouched by caterpillars, whilst others were infested with them, found that the healthy bed had a quantity of Dill growing on it, the smell of which, apparently, was obnoxious to the caterpillars. As Dill will grow in almost any soil, it is suggested that the experiment might be tried elsewhere.

No. 358.] SATURDAY, SEPTEMBER 28, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

FRENCH AND ENGLISH-RAISED GLADIOLI.

Of all our autumn-blooming plants, the Gladiolus must, I think, carry off the palm—the Dahlia and the Hollyhock must give way, notwithstanding their long and well-deserved popularity, to the Gladiolus; indeed, the Hollyhock seems to be taking itself out of the way, the mysterious disease which has affected it having baffled all attempts to get rid of it, and the raising of seedlings being equally fruitless, for the seedlings seem as subject to it as the old plants. The Hollyhock, too, is more suited for giving grand effects, and when grown in quarters by itself takes up a great deal of room. The Dahlia one cannot disparage. A great authority once called it "lumpish and inelegant." Judged by some standards of beauty, it may be so; but we have to recollect that there are various forms of beauty: we may admire the solid grandeur of the Egyptian temple as well as the graceful and airy form of the Gothic cathedral. In the symmetrical form, the varied colours, and the stately habit of the Dahlia there is a beauty which has won for it the favour and affection of many a devoted enthusiast; but the Gladiolus has many claims to the consideration of the lover of flowers. Its erect habit, the varied colours it displays, the small space of ground which it occupies (for several hundred sorts may be grown in a space which half-a-dozen plants of Dahlias would occupy), the manner in which it blooms in water after it is cut, lasting for many days and opening out its upper blossoms as the lower ones decay—all combine to make it one of the most beautiful and deservedly valued of florist flowers, while the improvement that has taken place of late years has given it a beauty which the older flowers never possessed.

Like many of our modern flowers, we owe our first advance in improvement to Continental growers—the Aster, the Verbena, the Phlox, the Pentstemon, and especially the Rose, were all taken in hand by the French before they were attempted on this side of the channel. So it was with the Gladiolus. It must be now above forty years since Mons. Souchet, then head gardener at the Chateau of Fontainebleau, now a venerable and respected private citizen, beloved by all who know him, began the improvement; and although some few others, such as Messrs. Courant, Berger, and Gardier, have followed his example, yet nearly the whole of the varieties now in commerce (as far as France is concerned) are of his raising; and not only so, but almost the whole trade is in the hands of Messrs. Soulliard & Brunelet, his successors; they supply the great French houses of Paris, by whom the bulbs are forwarded to all parts of the world. At a later period than this Mr. Kelway, of Langport, in Somersetshire, began his culture and hybridising of the flower. This year he issues his twenty-seventh catalogue, so that I should suppose it must be some thirty years since he began; and, as in many of the other cases to which I have already alluded, the English raiser has equalled and excelled his French rival. I do not know what amount of land Messrs. Soulliard & Co. have now under cultivation, but the Messrs. Kelway have about eight acres, and it will be readily imagined what an enormous quantity of bulbs that must involve, while each year gives us greater variety and larger and more solid flowers. There seems to be a different idea of what constitutes a good spike of Gladiolus abroad from that which prevails with us. We prefer one wherein all the individual flowers not only face the front, but where they also are so close that there are no spaces between them. Let us take, for example, such a flower as Meyerbeer, now very old, but unsurpassed in its shade of colour; there we have a spike which has twelve or fourteen blooms expanded at the same time, and without any space between each bloom, so that they are tucked in one to another, and present a solid front of colour. In contrast to this I take one of the latest of the Continental productions (Leviathan), which has not more than half-a-dozen blooms open at once; these blooms are far apart, and consequently do not present the attractive appearance they might do were the blooms differently disposed, but I have heard the French growers like this style of flower as being more graceful and elegant. Then there is another point in which Mr. Kelway's flowers are superior to the French ones—their greater substance. Let us compare, for example, two white flowers recently sent into commerce—Diamant (of Mons. Souchet) and Scopas (of Messrs. Kelway). The former is as flimsy as a piece of muslin; there is no shape in the petals, which are dog-eared; and, although described as an extra large flower, and priced higher than any Gladiolus sent out recently by them, is really an indifferent flower. Scopas, on the other hand, is a large flower, indeed very large; in form it quite comes up to the standard, has a large number of blooms open at once, and is as solid as the other is flimsy. When flowers have to be cut this is a matter of some consideration, for, of course, those with good substance will remain fresh longer than flimsy ones. I think the honour of raising what I believe to be the finest Gladiolus in cultivation (Duchess of Edinburgh) must be accorded to the same firm. In colour it is a lovely rose, with a carmine stripe on the lower divisions, fine form, and of great substance and size; I have counted a dozen blooms out on it at one time, and it has then a very noble and grand appearance. While saying this I do not mean to disparage many of the very beautiful varieties which Mons. Souchet has given to us. Amongst light-coloured flowers Norma, Ondine, Shakespeare, Madame Desportes, Psyché, Leda, Ginevra, Murillo, and others; and amongst red, in its various shades, Legouvé, Le Phare, Jupiter, Hecla, Horace Vernet, Le Vesuve, and Hercule are grand flowers. All that I would imply is that the English grower is not behind, and that the last two years have not certainly been as productive in fine French novelties as previous years have been.

It is very much to be deplored that no opportunity of exhibiting these fine flowers, or their usual autumn companions the Dahlia, Hollyhock, and Aster, is now given in the metropolis, and that we have to look to the provinces for anything worthy of the name of an exhibition of autumn flowers. It has, I suppose, been found that they do not pay, or else we might have imagined that the Crystal Palace or the Alexandra Palace would have held them. Last year there was a show at the former place, but this year flowers form no part of their programme. People may decry exhibitions, and may complain of the way in which cut flowers are shown; but it is nevertheless a fact that nothing so encourages the growth of any flower as the offering of prizes at flower shows. People see them there who would never see them in the nurseries or private gardens from whence they come; they are induced to try them, and then probably the taste is engendered, and they become ardent admirers of the flower. Moreover, it tends to correct the judgment of those who have already grown them; they see flowers better than their own, and are stimulated to increased care, and go home with a more humble estimate of their own prowess. When we rest satisfied with our own advance, it is well for us to be shown that "wisdom does not dwell with us." More especially is this the case when we raise seedlings; the exaggerated estimate we are inclined to form of our own productions becomes sobered down by comparison with the flowers of others, and we return home wiser, if sadder. But if autumn shows are financial failures, it is useless to expect them to be held, and we must only look to the prominence given to Gladioli in our various horticultural journals to obtain for them the patronage they deserve. It is for this reason that I have endeavoured to draw attention to this beautiful flower. The stand which Mr. Kelway lately exhibited at South Kensington must have convinced all who saw them of their great merit; and it may be well to say, as showing the high standard which has been reached, that flowers which were set up for certificates were passed by by the floral committee which a few years ago would have been hailed as first-rate flowers. Let anyone, then, who wishes to attempt their cultivation obtain some of the lower priced seedlings of Mr. Kelway, and a few of the older flowers of French origin, and they will be laying up in store for themselves a great treat in the ensuing autumn, and will afterwards be tempted to higher flights.

DELTA.

THE FRUIT GARDEN.

WALLS AND WALL TREES.

The season is now at hand when tree planting may be successfully carried out, and also when, owing to the trees being leafless, the walls may receive that attention of which they frequently stand in need. One of the first considerations should be a smooth even surface, free from nail holes or inequalities of any kind, as where these exist insect pests find shelter in them in winter, and are ready to recommence their attacks in spring. Old walls should be plastered and receive a good coating of whitewash, as it not only looks clean and sweet, but white has been proved by direct experiment to be the best ground colour on which to train the trees. I need scarcely remark that any trees infested with scale should be well scrubbed, taking care to save the buds as much as possible, and then painted with some strong insecticide. As regards the manner of training, I believe that the wiring system has many advantages, if the wires be properly fixed, so that the wood is kept close to the walls; but when the wires are stretched horizontally in any considerable lengths the strong branches draw them away from the walls, and consequently the benefit arising from the latter is lost. As regards borders, I am of opinion that most of our wall trees will grow well in any soil that produces good crops of vegetables, provided the border be deeply cultivated at first and confined to the roots of the trees afterwards; or, if not the whole border, a wide alley, at least 4 ft. from the wall, should remain undisturbed and mulched during summer, and the remainder should only be employed for shallow rooting choice vegetables or salads. More attention should also be paid to the rotation of wall trees than that subject ordinarily receives, for if Peach trees have occupied a south wall for twenty or thirty years it is almost a waste of time and trees to suppose that merely trenching the border will supply their wants. No; they must have fresh soil, but in many cases the best course would be, as Peach culture under glass extends, to devote a larger amount of south aspects to the choicer kinds of winter Pears, such as Easter Beurré, Glou Morceau, Beurré Rance, &c. We have hitherto given winter fruits only a secondary position where they naturally only attain second-rate quality. East and west walls will bring to perfection most of our ordinary mid-season Pears, Plums, Cherries, &c., and north walls may be profitably occupied with Morellos and other Cherries, Currants, and dessert Gooseberries; but the south aspects should be devoted to the earliest Cherries, a selection of Peaches, Nectarines, and Apricots, and a choice collection of winter Pears. Space is too valuable to allow them to be trained horizontally; therefore, some of the many modifications of the upright cordon will be found an improvement, producing, as it does, speedier and better results. J. Groom.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Large Melons.—At Longford Castle a fruit of Duke of Edinburgh is said to have measured 25 in. round the middle, and 28 in. in length, and its weight was 11 lb. 12 oz. At Croome Court I saw the other day a fruit of Incomparable which measured 28 in. round the middle, and 29 in. in length, and its weight, when cut, was 13 lb. 10 oz. There were also here many Melons, each of which weighed from 8 lb. to 10 lb.—J. H. D.

The Sultana Grape.—Allow me to inform Mr. Quin that this Grape has been cultivated at Ashburnham Place, Sussex, for over forty years. It was so highly esteemed by the late Earl of Ashburnham when travelling in the East that he brought plants of it home with him. This Grape requires different treatment from other varieties, and should be grown in a house by itself, in order to ensure success. I never found it to force well, but when once commenced to grow naturally it ought to be encouraged with fire-heat and plenty of moisture. Being a late-keeping Grape, it ought to be well ripened in September, when the berries ought to be of a bright amber colour. Although small in berry the bunches are large, and will hang until March without shrivelling. The pruning most suitable for it is that known as the rod system.—A. Hossack, *Ragley, Alcester.*

Pear Trees for Avenues and Groups.—Writing lately of the need of more orchard trees, and of fruit trees scattered over the land without any relation to the orchard, we might have spoken of the stately grace of the Pear tree when mature or old. As a beautiful object it is probably before any tree planted for ornament, considering its fine form, early and profuse bloom, and the beauty of the fruit. We noticed the other day a handsome avenue of Pear trees, a line on each side of a roadway leading to a Swiss town. The trees were all laden with a small Pear used for making perry, and were more graceful in form than many of our "weeping lawn trees." They were about 36 ft. apart in the lines; anything less would not allow of the trees attaining great size or being seen to advantage. Why not avenues of the freest-growing of the good Pears? Why not groups of them in our parks? They, at least, are not exotic and disappointing like many of the Conifers planted in avenues of late years; but trees of our own regions, which no cold we experience can destroy. We have seen them in Worcestershire and elsewhere attain the size of forest trees. Surely groups of such are well worthy of being added to the deciduous trees in our parks.

Strawberry Lucie Flament.—Among new varieties of Strawberries shown in May and June at the Paris International Exhibition, this variety occupied a prominent place. It is a cross between Marguerite Le Breton and Dr. Morère, and it possesses all the good qualities of the two kinds without their faults. The berries equal in size those exhibited last year at the Belgian Horticultural Show. For forcing it is all that could be desired. M. Flament, who raised it, has kept 800 plants in reserve for next season, and M. Godefroy-Lebeuf has purchased the stock of it.—L.

Selecting Pear Trees for Planting.—One seldom looks over a new plantation of Pears without finding a number of varieties that are in every way thriving and giving promise of good results, while an equal number is by no means satisfactory. As a rule, the aim seems to be to have as many varieties as possible, some of which might succeed on a wall, but in any other way are useless, and others are not suited to the locality. The season for planting being now at hand, I would recommend the selection of varieties that would succeed in the district in which the new plantation is to be made, for what can be more vexatious than spending time and labour on the culture of a given number of trees the produce of one-half of which turns out to be useless? Few fruits, in fact, are more variable than the Pear, or are more capricious under haphazard culture. The best way of converting vigorous, but unfruitful, Pear trees, or such as produce fruit of inferior quality, into remunerative ones, is to head them down while the sap is dormant, and to re-graft on all the extremities as soon as it begins to flow in spring with some tried sort from the neighbourhood. The double grafting will be certain to induce fertility, and in a few years the produce will exceed what it is possible to obtain by any less radical measures.—J. Groom.

Protecting Early Vine Borders.—Allusion is made by Mr. Simpson (p. 261) to an admission said to have been made by me in The Garden (p. 241), but I am at a loss to guess what that admission is, as I have not taken part in any controversy to my knowledge; I cannot, therefore, discover where I have written supporting Mr. Simpson's opponents. For Mr. Hind's omission to mention the inside borders here, I cannot surely be held accountable. All our Vineries have inside borders, and the front walls stand on pillars, beyond which there are outside borders, a system I have always advocated, from the facility which it affords for renewing the borders at any time without deteriorating the crops, as the inside border can be renewed at one time and the outside one at another, a consideration where a regular supply is required. I used to cover the outside border with fermenting material, but for these last five years I have dispensed with that, and I have merely protected the borders from rain and frost, a plan which I find gives more substance to the foliage, and puts a finer finish on the fruit. I, therefore, still support the protection system, as under it the temperature of the border declines gradually to the lowest point; and if the border be thoroughly drained, the roots will retain their vigour in a very low temperature, and when spring returns they will be found well able to supply any demand that may be made on them.—J. Smith, *Waterdale.*

—— Mr. Simpson says (p. 261) that I have done more than any one else to convey a wrong impression with regard to Mr. Smith's practice at Waterdale, inasmuch as Mr. Smith admits that the better half of his early Vine borders are inside. Here are my words taken verbatim from the July number of "The Gardener": "I have seen the borders at Waterdale, many of which are inside, but in one particular house—a lean-to—with the border outside, and in which the crop was ripe at the time of my visit, was perhaps the most remarkable crop of fruit I ever saw at the time of year." The allusion to me is, therefore, uncalled for.—W. Hinds, *Otterspool.*

Redleaf Russet Apple.—This is said to be a cross between the Golden Knob and Golden Harvey; its colour is that of the Golden Knob; the yellow colour of the flesh would seem to be derived from the Golden Harvey; whilst the growth of the tree and manner of bearing resembles both Nonpareil and Golden Harvey more than the Golden Knob. When in perfection, the flavour is delicious; and the fruit may be considered to be at its best from February until the end of May; after that, although it keeps sound until the end of July, the flavour gradually deteriorates. Messrs. Paul & Son, who showed specimens of this Apple the other day, state that though of moderate growth, it is vigorous enough to form a good-sized handsome tree.

NOTES OF THE WEEK.

The Red Water Lily.—Messrs. Frœbel, of Zurich, who have a large number of young plants of this, are not disposing of any till they have flowered each plant and proved it "true" as regards colour. Many of their plants are seedlings raised from the fine old plants they possess of this variety. A few of the seedlings have already bloomed, and proved quite true in colour. Many are expected to bloom during the coming year.

Gynerium argenteum nanum.—This new dwarf form of Pampas Grass is now in perfection, and merits strong recommendation, being suitable for even the smallest gardens, which can scarcely be said of the typical species. Throughout the whole summer its neat compact habit of growth attracts the eye. The flower panicles are about 5 ft. high, exceeding the foliage by 2 ft., or thereabouts.—W. THOMPSON.

The Flower Beds near Westminster Abbey.—We never remember to have seen the little garden near Westminster Abbey so completely flowerless in September as it is this year. The turf, on the other hand, is as fresh and green as a well-kept lawn in the country could possibly be, presenting a striking contrast to the dull, littery-looking beds which are just now objectionable rather than attractive.

Melons in Covent Garden.—This season appears to be a good one for Melons, if we may judge by the quantity now to be found in Covent Garden. The majority of them are medium-sized, English-grown fruit, which, if sold at moderate prices, will greatly diminish the demand for the large, coarse, foreign fruits which are to be found in the market nearly all the year round. Mr. Bennett, of Rabley, has had this season hundreds of Melons hanging in his houses at one time, presenting a sight, the like of which is seldom seen in the case of Melons.

Worcester Pearmain.—Specimens of this handsome early Apple, lately sent out by Messrs. Smith & Co., Worcester, have been sent to us by that firm. It is said to be a seedling from Devonshire Quarrenden, which, however, it only resembles in being very highly coloured. The tree is stated to be a free bearer, and, from the great beauty of the fruit, when better known, cannot fail to be a favourite, especially for market purposes.

Lapageria rosea.—We have received from Mr. Bernard D. Rowe, of Dinglefield, Liverpool, a truss consisting of seven blooms of Lapageria rosea; so compact a cluster is, we need scarcely say, of rare occurrence, more especially as the plant from which it was cut is said to have been in constant flower since May last, and still carries upwards of sixty-five fully-expanded blooms, besides an even greater number of buds.

Standard Trees of Tamarix.—These are exceedingly nove and graceful, as grown in some of the little squares in Zurich, and also in one or two towns in North Italy. The kind is T. tetrandra; they are trained with about the usual height of stem of ordinary street trees, and are allowed to spread into large heads. The flowers on these trees are said to be produced freely. They retain their verdure up to the present time.

Autumn-blooming Colchicums at Tooting.—Several large beds devoted to Colchicums in Mr. Barr's grounds, Tooting, have for some time past been, and still are very attractive. The kinds consist chiefly of C. speciosum, C. byzantinum, C. b. longipetalum, and a white-flowered form. The individual flowers of Colchicums do not, as a rule, last long, but as they are produced in succession, a long season of bloom is the result. It is, however, often destroyed on account of the plants being grown in unsuitable positions, viz., in bare beds of soil, which, splashing the blooms during heavy rainfalls, impairs their beauty. The best places for Colchicums are little Grassy nooks near shrubberies and trees, where the soil is well drained, sandy, and rich. On rockwork, too, planted among dwarf Sedums and similar subjects, Colchicums would thrive well and make a show in autumn, when rock gardens are comparatively flowerless.

Remarkable Growth of Pampas Grass.—Where large clumps of this Grass are required in a short time, they may easily be obtained by adopting the method pursued by Mr. William Paul in his nurseries at Waltham Cross, by which means he has secured noble clumps, furnished with dozens of flower spikes, in little more than two years. The seed was sown in autumn, and when the plants were large enough they were potted into 5-in. pots, and from these in the following June they were transferred to the open ground. The soil in which they were planted was deeply dug and well manured, and from twenty to thirty plants were placed in a large, round bed. These have grown with such uniform vigour that one could scarcely detect that more than one plant had been used. Much is doubtless due to the rich soil in which they were planted in the first place, and not a little is also due to the heavy rains and floods which occurred in this neighbourhood this season, thus serving to show that rich soil and abundance of water are necessary for the perfect growth of the Pampas Grass.

Large Cockscombs.—We have received from Mr. Craike, of Chapel Road, Stamford Hill, a Cockscomb, the comb of which measured 24 in. one way and 15 in. the other. The seed from which it and others equally large were raised, Mr. Craike tells us was sown thinly; the young plants were pricked off early and received no liberal treatment until the combs measured 2 in. across. They were then potted firmly in good soil, such as that in which Pelargoniums are grown, plunged in a moderate hotbed, and given abundance of air. As soon as the pots were full of roots, greenhouse treatment with weak manure water once a week is all they required. 6-in sized pots are quite large enough for Cockscombs, and indeed in some seasons they have done well in 4½-in. pots.

Royal Horticultural Society's Preston Show.—We regret to find by a circular that has been issued by the local committee of the late horticultural show held at Preston that there is a deficit of nearly £1500 after paying all expenses. This deficiency is attributed by the committee to "the wet weather on the first two days, and the presence of the Lord Mayor of London at that time in Blackpool on the occasion of the opening of the winter gardens."

Woolhope Club Fungus Foray.—Although several deaths have already been announced in the papers—"through eating Mushrooms"—the Woolhope Club will hold its annual foray on Oct. 3, meeting at the Free Library, Hereford. Members and fungus collectors generally are requested to forward as many specimens of Mushrooms as they can find not later than Wednesday morning, Oct. 2, in order that they may be properly arranged for the evening meeting. Through the want of a little knowledge of fungi people suffer in two ways—if they let all the "Toadstools" alone much valuable food is wasted, if they eat without knowledge they run serious risks.

Cassia corymbosa Out-of-doors.—This plant must be much hardier than is usually supposed. I placed a small plant of it in June last year against a west wall in the kitchen garden here, where it stood last winter uninjured, and has this year made growths of from 6 ft. to 8 ft. in length, flowering from almost every axil, and even now (September 24) it is in full bloom. The flowers are much larger than when grown indoors, and the foliage of a deeper green and beautifully clean and healthy. The plant already covers a large piece of wall. I should add that last winter I placed a Yew bough in front of it.—D. UPHILL, *Moreton, Dorchester.*

The Old Watergate in Buckingham Street.—The Metropolitan Board of Works have purchased the Buckingham Street Watergate, which now occupies a retired position in the Thames Embankment Garden, for £5000. It is to be raised and used as an ornamental entrance to the Embankment Garden from Buckingham Street. It is said to be as old as the time of Elizabeth.

Fresh Fruits from Australia.—We understand that an attempt is about to be made to place the finest selected fruits of the Antipodes on the markets of London in such a state and at such prices as to compete with English produce. We already go far enough afield in search of choice fruits, and it is only a question of price whether Australia is to become one of our sources of supply. The cultivation of Oranges is being taken up with energy both in New South Wales and Victoria, and as this fruit can be gathered unripe, and will mature on the voyage, there will be less risk of loss than in the transport of other kinds of fruit. As, however, the fruit season in Australia is exactly the period when fruits cannot be obtained here, the probability of remunerative prices is all the greater.

Skimmia japonica at Fulham.—One of the most striking features in Messrs. Osborn's nursery just now is a large bank consisting of many hundreds of this pretty berry-bearing shrub. In spring the plants were lifted and potted, and throughout the summer were placed close together in the open air. In this way their flowers set well, and the plants in question, which range in size from that of compact little bushes, in 6-in. pots, to large specimens, are literally covered with scarlet fruit. As a room plant the Skimmia is much more valuable than any of the Solanums, inasmuch as the latter frequently shed their foliage and often their berries; the Skimmia, on the contrary, will bear the heat of a room for a considerable time without suffering much injury, and retain its fruit to the last. As a standard for dinner-table decoration, or for mixing amongst other plants in greenhouses or conservatories, this species of Skimmia might be used with advantage.

NOTES FROM KEW.

Hardy Shrubs.—The South European Cneorum tricoccum is charming little shrub, whose fruits, nestling amongst the dark green, Box-like leaves, are at present assuming a deep red colour; these, with the small but bright yellow blossoms, produce a very pretty effect. Lippia chamædrifolia, a neat-growing shrub, with rigid, dark green leaves, is flourishing on one of the walls; it bears long spikes of small, pretty lavender-coloured blossoms.

Hardy Herbaceous Plants.—Impatiens amphorata, an Indian annual, is one of the best of the hardy Balsams; it makes a very neat dense bush, about 2 ft. or 3 ft. high, and produces a profusion of handsome blossoms, the upper part of which is a pinkish-purple, the lower, a fine rich yellow spotted and lined with dark red-brown. Crocus Cambessedesi, found wild in the Pine forests of Majorca, is a rare and most lovely little plant; in colour it is white slightly tinged with mauve. C Kotchyanus, from Asia Minor, with very pale blue flowers, the Oriental C. pulchellus, with fine, light purple flowers, and C. speciosus, from the Caucasus, with dark blue flowers and orange-red styles, are among the most desirable of the autumnal Crocuses now in flower in the Kew collection. Cedronella mexicana, a handsome Labiate, is a neat little bush somewhat more than 1 ft. in height; its numerous flowers are of a pleasing pink colour. Valoradia plumbaginoides, from China, merits mention on account of its late-flowering qualities; its deep blue blossoms are very effective. Centaurea babylonica, an Oriental plant, grows about 4 ft. high and has large, whitish, almost entire leaves which are somewhat oval in outline, and bright yellow flower heads, which are, however, not large. Mikania scandens, a North American perennial, is an elegant climber with small, Eupatorium-like flower-heads and light green, heart-shaped leaves resembling in form those of the common Bindweed; if allowed to creep naturally over old logs this makes a beautiful covering; it also comes in well for partially covering arbours and similar structures.

Greenhouse Plants.—Eucnide bartonioides, an illustration of which is given in The Garden, p. 91, makes a useful pot plant for the decoration of the greenhouse and conservatory; it flowers freely in a small state, and with but little pot room, and its large, sulphur-yellow blossoms, with their long and very numerous stamens of the same colour, render it extremely attractive and different from anything else now in flower. Astelia Banksi is a curious New Zealand plant of the easiest cultivation; the small flowers, produced in dense panicles, are succeeded by mauve-coloured, berry-like fruits. Speaking of one of the Astelias, figured many years ago in the "Botanical Magazine," Sir Joseph Hooker says: "All are densely-tufted herbs, with a short, creeping rhizome, with very long leaves, more or less covered with shaggy wool or silvery hairs. The large kinds form a conspicuous feature on the lofty trees of New Zealand forests, where, growing epiphytically on branches, they resemble gigantic birds' nests." In cultivation they grow well in well-drained fibrous loam. Echidnopsis cereiformis is a peculiar South African succulent allied to the Stapelias, and does well if treated in the same manner; from its thick stem it produces numerous small yellow blossoms. Fourcroya Selloi, from Guatemala, and F. cubensis, from Cuba, are handsome, Agave-like Amaryllids, with flower stems 10 ft. to 15 ft. high. Witsenia corymbosa, from the Cape of Good Hope, with its Grass-like leaves and handsome, dark purplish-blue blossoms, ought to be much more generally grown; it is a charming greenhouse plant, and one, too, which it is not difficult to manage.

Stove Plants.—The sweet-scented Garland-flower (Hedychium coronarium) is a splendid Canna-like plant, 5 ft. or 6 ft. high; the large, fragrant blossoms are of the purest white, with the exception of a blotch of pale primrose on the upper portion. Scutellaria violacea, an East Indian sort, is a neat-habited and free-flowering plant with dark violet-blue flowers. Ipomæa Selloi, a Brazilian climber, has hairy, heart-shaped entire or lobed leaves and pink, trumpet-shaped blossoms. Pitcairnia fulgens, with its arching leaves, light green above and very glaucous beneath, and panicles of deep red flowers, is a useful decorative stove plant.

Orchids.—Oncidium tigrinum, from Western Mexico, is a noble kind with tall panicles of splendid, very delicately, violet-perfumed blossoms; the sepals and petals are pale yellow and brown, while the very large lip is a bright sulphur-yellow. O. Harrisonianum, a native of the Organ Mountains and other parts of Brazil, is very floriferous. In describing it, Dr. Lindley says that the dull grey horn-like recurved leaves, and most remarkable crest, render it impossible to mistake this pretty little plant, whose brilliant yellow flowers are enlivened by rich crimson linear stains. Miltonia candida grandiflora is a beautiful plant with large flowers, the sepals and petals being brown and yellow, and the large lip white with a purplish blotch at its base. M. Clowesi has sepals and petals blotched with chocolate-brown on a yellow ground; the lip is white at the tip and violet coloured at its base.—†.

THE SPECIES OF MECONOPSIS.

The following list is restricted to the species at present in cultivation, but there are yet others to be introduced equally beautiful and interesting as those enumerated. With the exception of our common British species, the Welsh Poppy, they are all natives of Northern India, chiefly inhabiting various localities on the Himalayas; they are all of comparatively recent introduction. Of Himalayan Poppies there are four kinds, viz.:—

Wallich's Meconopsis (M. Wallichi).—This fine species attains the largest size of any. The leaves measure from 8 in. to 12 in. long, deeply cut nearly to the midrib, of a pale green colour, and covered on both sides with soft brownish hairs. The flower stems are said to be 6 ft. high in the wild specimens and much branched. The blossoms are 1½ in. to 2 in. in diameter, of a pale purple colour, with a central cone of bright yellow stamens; it is found at high elevations in Sikkim and Nepaul.

Nepaulese Meconopsis (M. nepalensis).—This so much resembles the last in a young state that the two are often confused. They may be readily distinguished by the leaves of this species not being so deeply lobed as those of the other; in fact, in some forms but slightly toothed. The flower stems are from 3 ft. to 5 ft. high and not so much branched as in M. Wallichi. The blossoms, which are produced freely, measure from 2 in. to 3½ in. across, nodding, and are said to be of a bright golden-yellow colour, though under cultivation they do not assume such a bright colour, but are of a pale golden yellow. It inhabits Nepaul and various parts of the temperate Himalayas.

Prickly Meconopsis (M. aculeata).—This is a rare and very distinct kind. Its leaves are from 4 in. to 8 in. long, oblong or lance-shaped, irregularly lobed, of a pale green colour, and beset with numerous soft prickles. The stems measure from 1 ft. to 2 ft. high, and are crowned with numerous blossoms borne on slender stalks, the blossoms measuring from 2 in. to 3 in. in diameter, and of a blue-purple colour. It is found in Western Himalaya, from Cashmere to Kumaon, at high elevations.

Simple-leaved Meconopsis (M. simplicifolia).—This is also very distinct. It produces a tuft of lance-shaped root leaves, from 3 in. to 5 in. long, very slightly toothed, and covered with a short, dense, brownish pubescence. The flower stalk is unbranched, about 1 ft. high, and bears a single blossom at its apex from 2 in. to 3 in. in diameter, of a violet-purple colour.

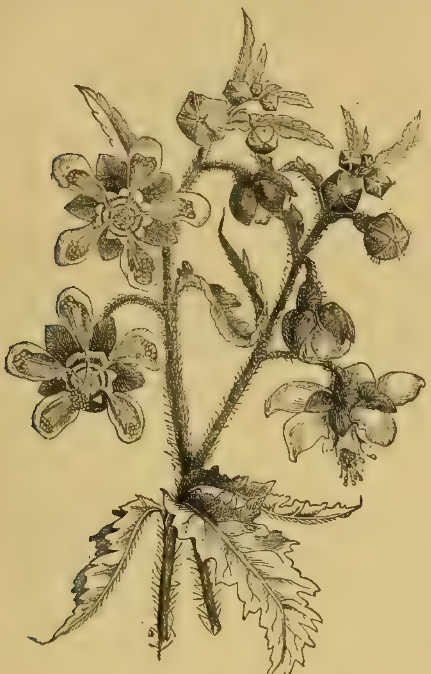
These Poppies require to be grown on well-drained rock-work, planted in good soil, with a plentiful supply of water in summer, but they must be kept as dry as possible in winter, as excessive humidity in cold weather soon kills them. Pieces of sandstone broken finely should be placed under the leaves so as to prevent them from coming in contact with the damp soil. A piece of glass placed over the leaves in a slanting position also protects them from too much moisture. W.

Saxifraga cæspitosa.—Amongst plants used for carpeting bed I find none so effective as this Saxifrage. Its freshness of verdure, evenness of growth, and general adaptability for that purpose are certainly not equalled by such plants as Mentha Pulegium, which takes a good deal of trimming in order to keep it within bounds; neither is the Herniaria glabra so soft and pleasing as the Saxifrage in question, which I have here in a large oblong panel; and, having fully tested it on a large scale, I can strongly recommend it as a hardy plant, which will give every satisfaction in pattern arrangements with the least possible trouble.—G. Westland.

Aster Novæ-Belgii var. minimus.—The object of this note is not so much to extol the beauty of this plant, which is one of the best of the numerous family to which it belongs, as to point out an error which exists as regards its nomenclature. It is known by the names of longifolius var. formosus, or ramosus, or minor, and other names, but those who possess the true A. longifolius will see that the dwarf plant has no affinity with it. Good distinguishing points are the oval root leaves in longifolius and the lance-shaped, pointed leaves in Novæ-Belgii. The colour of the flowers in the type is not quite the same, as it is pale mauve; in the dwarf plant it is much darker, but in all other points they agree.—W.

LOASA VOLCANICA.

Subjoined is an illustration of this handsome, newly-introduced, half-hardy annual. It is compact and branching in habit, and from 3 ft. to 4 ft. high, with Tomato-like leaves, which, together with the stem and the outside of the flowers, are beset with numerous, short, stinging hairs. The flowers are about 1 in. in diameter, and are borne singly in the axils of the stem leaves, each branch producing from twelve to twenty blossoms, which open in quick succession and last a long time, rendering it an attractive and beautiful object for several weeks together. The structure of the flower is somewhat singular; the five green divisions of the calyx alternate with as many pure white, boat-shaped petals, in which lie the yellow-tipped stamens. In the centre are five two-horned appendages, which are orange coloured on the outside, and crimson transversely marked with white on the surface. It requires the same treatment as that usually afforded to half-hardy annuals; the earlier the seeds are sown the better, as the stronger the plants the longer they flower. Like all other members of the genus it is of South American origin, abounding chiefly in Peru and Chili. A coloured illustration of it will be found in a recent number of "L'Illustration Horticole." It is probably identical with the plant lately sent out by Mr. Thompson, of Ipswich, under the name of L. Wallisi. W.



Loasa volcanica.

Fuchsias Out-of-doors.—Although the Fuchsia has been long grown well under glass, its merits as a hardy plant are by no means fully recognised, for the best specimens of out-door Fuchsias ordinarily seen consist of the very oldest varieties. Riccartoni, the old ripened wood of which is hardy enough to withstand ordinary winters, makes quite a beautiful bush in mild districts, but most of the newer kinds do best cut down close to the ground early in winter, and with a covering of coal ashes placed on their roots. Thus treated, such sorts as the white corolla'd Madame Cornellisson, and any free-flowering sorts of good habit like Rose of Castille, make most beautiful and continuous-flowering border plants. They need scarcely any attention after they are once planted, as the annual shoots look better left to grow as they like than when a forest of sticks and ties is added under the impression of improving them. The latter give them by far too formal an appearance.—J. Groom.

TREES AND SHRUBS.

JAPANESE AND OTHER SHRUBS AT BAGSHOT.

Few nurseries are more charmingly situated than that of Mr. John Waterer at Bagshot, and few are more favoured as regards soil, especially for what are called American plants. Rhododendrons, hardy Azaleas, and broad-leaved Kalmias form, as most people know, a prominent feature in this nursery, and to these may be added Japanese Conifers. Rhododendrons, both large and small, are this season better set with flower buds than might have been expected, considering the comparatively sunless summer which we have had. In long frames may be found thousands of seedlings, the produce of seed saved from hybridised flowers of the best kinds, in the hope of still obtaining something new; whilst large breadths of established plants of the best kinds have been layered in order to maintain the necessary yearly stock. Branches with bushy little heads are bent down to the ground, and, after the wood has been slit with a knife, are embedded and pegged down in prepared, rich, sandy soil. In this position they remain two years or so, in order to allow them to become well rooted. They are severed from the parent plants some time previous to being lifted, thus throwing them on their own resources for a time previous to moving them. When that period has arrived they are planted in lines ready for sending away as occasion may require. The old stools throw up an abundance of fresh shoots, which again furnish material for new plants. Each year afterwards the young plants are moved in order to keep their roots fibrous and render them easily transplanted; and such is the nature of the soil here, that not only small Rhododendrons, but fair specimens of Conifers may readily be moved from the ground, with a large mass of fibrous roots and a good ball of soil, by simply swaying the tree to and fro, and eventually lifting it without the aid of either spade or fork. Among the large breadths of Rhododendrons are planted standard or pyramid Conifers, which obviate that formal, nursery-like appearance often found in large nursery gardens. In planting Rhododendrons here a good dressing of rotted manure is often applied to the soil and dug in, and, as the ground gets too light, heavy, clayey loam from the adjacent hills is added to it. This at once does away with the theory, too long indulged in, that peat is absolutely necessary for the growth of Rhododendrons. They will grow well in any kind of rich, well-drained soil, excepting lime and chalk.

Retinosporas, which are among the most valued of Conifers, here receive special attention. R. plumosa is represented by some of the largest specimens in the country, and associated with these is the original plant of the beautiful R. p. variegata in good health. R. p. aurea, one of the most valued of golden-leaved Conifers, may be found by the hundred in all stages of growth dotted about the grounds; it has a compact habit of growth, yet devoid of that stiffness and formality characteristic of many of our Conifers; it is of a rich golden colour, and its chief value lies in the fact that its young growths do not get scorched during summer, as is the case with many variegated Japanese plants. R. filifera, grown as a standard, makes an excellent plant; it is grafted on the common Arbor-vitæ from 4 ft. to 6 ft. high, and its long, cord-like foliage assumes a gracefully weeping habit, which adapts it for isolating on lawns or for the centres of flower beds. R. plumosa aurea also makes a fine standard, its compact heads looking like balls of gold in the sunlight. R. p. argentea is a capital little plant in pots for windows; it is close and compact, and of a bright sulphur colour. R. lycopodioides grows here amazingly, its crested foliage being of the deepest green colour.

The original plant of the silvery-leaved Juniper (Juniperus japonica alba) introduced by Mr. Fortune, is still to be found in this nursery in vigorous health. The scarce Abies Engelmanni and its silver-leaved variety, A. E. glauca, may here be found in quantity, and A. magnifica, which is one of the most stately of the genus, makes marvellous growth in the Bagshot soil. Thujopsis borealis aurea, a sport which originated in this nursery, makes a fine plant; it is elegantly blotched with gold and is of graceful habit, and we found here the plant from which it was taken still bearing branches of a sportive character.

T. dolobrata variegata, a Japanese species, makes a very ornamental plant, and grows even more rapidly than the green-leaved variety, a circumstance not often found in the case of variegated plants. The Tree Ivy is largely grown, and makes fine bushes. It is not met with in gardens very frequently, but it might be planted with advantage where a good hardy evergreen shrub is needed. Standard Hollies of all descriptions are dotted about among low-growing shrubs with good effect, and we noticed that both green and variegated-leaved kinds are unusually well berried this year. Another interesting feature in these grounds is a large circular bed surrounded by a high, well-kept hedge; a magnificent specimen of the Lawson Cypress occupies the centre, whilst the remaining space is planted in panels with golden, silver, and green-leaved Conifers in miniature. These have a very fine effect, and serve to show how attractive and interesting even a small plot of ground may be made by means of hardy Conifers, which withstand without injury all weathers. Menziesia polifolia alba grows better here than we have elsewhere seen it; its foliage is of a dark, healthy green, whilst the flower spikes are from 6 in. to 9 in. long, and well furnished with pure white drooping blossoms. A large plot of ground planted with this Menziesia has been producing flowers for months past. The Japanese Honeysuckle (Lonicera aurea variegata), planted here and there about the grounds, makes a fine mound of rich golden foliage, and is even, if possible, more ornamental in this way than when grown on a wall or fence. Acer palmatum is one of the most rapid growing of the Japanese Maples, and its leaves change in autumn to a richly tinted gold and bronze; here it forms fine massive bushes. Thousands of plants of Andromeda floribunda are grown yearly for forcing; they form an abundance of flower spikes during the summer, and when lifted in autumn and potted they open freely in heat, and are almost equal in appearance to those of Lily of the Valley. Skimmia japonica, as grown here, is one of the best berry-bearing plants which we have for decoration in winter, and Spiræa japonica grown in this light, warm soil is quite equal for forcing to imported plants. Massive tufts of Tritoma Uvaria, many of them bearing fifty or more strong flower spikes 6 ft. in height, may be seen among the trees and shrubs from every part of the ground.

The old double white Camellia is grown here to a large extent, upwards of 4000 plants of it being grafted yearly. The stocks are all grown in the open air until grafted, when they are put into close glass cases in span-roofed houses until the grafts have taken; they are then removed to other houses in which Vines are trained over the roof, in order to afford them a little shade until they can withstand bright sunshine. In the following summer they are turned out of pots and planted out in temporary frames, where they make good growth and set their bloom buds; they are then ready for potting for winter blooming. Such plants are better than those of Continental growth, which frequently lose their flower buds, at least the first season after importation. C. S.

THUJOPSIS DOLABRATA.

Europeans who have seen this broad, hatchet-leaved Arborvitæ in its native country generally agree in thinking it the handsomest evergreen tree in Japan; it has, indeed, been described as "the fairest of all evergreens." No wonder, therefore, that this plant, so very distinct from all its congeners, when first introduced into Britain nearly twenty years ago, was universally admired; it seemed, indeed, to have been considered sacred, judging from the way in which it was cultivated in pots and nurtured in greenhouses. Large numbers of those pot-cultivated plants, which were, as a rule, of a low, spreading habit, were turned out into the open ground, where, as might have been expected, considering how they had been previously treated, they grew only moderately well. Frosts browned the greenhouse-built leaves, and the destruction of many plants was completed by snow breaking down their branches. This naturally beautiful and really hardy tree became, therefore, for a time unpopular, and even now it is not looked upon with that amount of favour which it so much merits. Nevertheless, I am confident that cultivators who treat this plant in a proper way will yet be fully rewarded. Of late years, as soon as plants of it are rooted, they are at once bedded, not too closely, in the open ground, where, if the soil be a good, rich, free loam, they strike root deeply and produce well-formed plants with good leaders. Grown in this way they have fewer branches, which are consequently better ripened, and therefore better able to resist the weight of accumulated snow, which never in the least injures them. A Manchester nurseryman some time ago informed me that it is one of the few Conifers that grow fairly well in the smoke-charged atmosphere of that city. The largest plant that I have heard of growing in Britain is in a garden at Exeter, and is 30 ft. in height. In Japan it is said to attain an average height of 50 ft. It prefers a rather moist to a dry soil, and if given the necessary shelter from cutting winds, which it needs and which it deserves, it will well repay all who plant it. There is a rather pretty variegated variety of it flaked with whitish leaves, and also a kind called T. dolabrata nana, a slow-growing miniature bush with comparatively small leaves, more resembling a Lycopod than a Conifer. Geo. Syme.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Robinia pseud-acacia semperflorens.—Allow me to direct the attention of ornamental planters and admirers of late-blooming hardy plants to this excellent variety. Its flowers are white and sweetly scented, and are produced in succession throughout the summer and during early autumn.—G. B.

Eucalyptus globulus in Cornwall.—A good specimen of this may be seen in the garden of Mr. Magor at Penzance. Its age is about eighteen years, its height about 35 ft., circumference of stem at 2 ft. and up to 12 ft. from the ground 21½ in. I observe (Vol. XII., p. 228) a specimen is reported as growing at Killarney, which is 50 ft. high. Previously to the severe winter of 1860 two specimens existed here, one of which stood independently, but was destroyed in a gale of wind when about 15 ft. high; the other, the same height and age, grew against a wall in shelter and died in that winter; the latter flowered freely more than once. I have recently planted another in damp ground and well sheltered.—J. J. R., *Penrose, Cornwall.*

Diospyros lucida.—In the pleasure grounds at Strathfieldsaye there is a beautiful specimen of this, I believe, very rare tree. It is about 65 ft. high, and has a stem which girths 4 ft. 2 in. at 5 ft. above the ground, and which is clear of branches for a height of 10 ft. Its habit is peculiarly graceful; the branches up to two-thirds of its height assume quite a drooping character, the tips of the lower ones sweeping the turf with as much grace and beauty as a Weeping Birch. The foliage is bright green, smooth, and glossy, and changing in autumn to the richest tints of crimson and scarlet. What a charming object this tree would make on a lawn near a mansion, or, indeed, anywhere planted for ornament it could hardly be out of place. Probably it will succeed best in sheltered situations, and perhaps if tried too far north it might hardly thrive. I should be glad of more information as to the hardiness of the different species of Diospyros. Can any one tell me where another good specimen of this interesting tree may be seen? I have a notion that the one in question is the best in England.—G. Berry.

The Weeping Wellingtonia.—I have a Weeping Wellingtonia the height of which is about 32 ft., and its circumference is 7 ft. 2 in. at 1 ft. from the ground. It is no more than 7 ft. or 8 ft. in width at the widest point, but the short, drooping branches are very thick and well furnished. I got this plant just sixteen years ago, a three-year-old seedling from a friend of mine who took the seed out of a cone sent to him from California. I mention this to show how fast this Conifer has grown, three times faster, in fact, than what an ordinary Wellingtonia of mine has grown in the same time. Is there any tree of the kind 32 ft. high elsewhere in this country.—F. Hamilton, *Coolayna, Carbury, Enfield, Ireland.*

Flowering of Paulownia imperialis.—A single plant of this, about 15 years old, flowered here partially this summer, and once previously a few years ago. Not more than three or four flowers opened on each spike. Are other growers more successful?—J. J. R.

Pernettya candida.—One of the neatest and prettiest of recent acquisitions to the rock garden, according to the "Irish Farmer's Gazette," is unquestionably this charming little trailing shrub. Its prostrate habit and neat foliage would alone be sufficient to recommend it as a rock plant, but when at this season its branchlets are terminated by clusters of pure white or occasionally purplish-tinted berries, much larger than those of the more familiar species of Pernettya, it looks quite a little gem in its way.

THE INDOOR GARDEN.

HEXACENTRIS MYSORENSIS AND ITS CULTURE.

There are few handsomer plants, and none more distinct, than this Hexacentris, which, when it first flowered with Messrs. Veitch, produced quite a sensation; the curiously-shaped individual crimson and yellow flowers, of which its long, pendulous racemes are composed, show themselves to the best advantage when seen drooping from the roof of a moderately cool stove. It is one of the freest of free growers, and will thrive under indifferent conditions of treatment such as would be fatal to plants of a more delicate constitution; but, although a free grower, it is easily kept in reasonable bounds, inasmuch as it will bear the knife better than most plants. There is one reason to which, perhaps, is assignable its not being more generally cultivated than it is, and that is, from being a native of Mysore many have been led to purpose that it required more heat than has proved conducive to its flowering freely. With it, as has frequently occurred in the case of other plants, cultivators have been left in the unfortunate position of knowing nothing about the altitude where the plant is found growing wild; but I should suppose, from its evidently doing better under somewhat cooler treatment than many plants we have from the same country, that it must have come from an elevated district. When well grown its drooping flower spikes will extend to as much as 15 in. in length. It is best adapted for draping the rafters of the house in which it is cultivated, or it may be trained during the growing season on thin twine near the glass, where it will be fully under the influence of light, and then trained on a trellis similar to the twining Clerodendrons. It is a quick grower, and can be got to a considerable size in a single season. It may either be planted out or grown in a large pot; the latter I prefer, as, under such conditions, it will attain a size sufficient for all ordinary purposes, and, being a very free rooting subject, it consequently quickly exhausts the soil, which, under pot culture, can be more readily renewed than when planted out. It appears to be a plant that under cultivation has no fixed season of flowering. I have seen it bloom well through the winter and early spring months from growth produced the preceding summer, well ripened up during the autumn, and slightly rested. I have succeeded in flowering it equally well through the late summer and autumn months from the current season's growth without any previous rest; but, to effect this, it must have a thoroughly light house with little shade, more air, and less moisture than the majority of stove plants need, and also not too much heat, otherwise it seems to keep on growing without having time to flower until checked, and the ripening process should be effected by a drier state of both the atmosphere and soil. Plants that have been rested through the autumn or winter in a temperature of about 55° at night, when subjected to 5° or 10° more warmth soon commence to grow, producing abundance of cuttings. These should be taken off, with a heel of firm wood attached to them, when about 6 in. long, inserted singly in small pots, drained, and two-thirds filled with sandy loam, the remaining portion being pure sand, kept moist, and covered with a propagating-glass in a temperature of 70°. They will root in a few weeks, when they may be gradually inured to the full air of the house, and when sufficient roots have been formed, which will be by the beginning or middle of May, they may be moved to 6-in. pots, well drained, and filled with good fibrous loam, to which should be added enough sand to allow the water to pass freely through it. I may here note that the plant appears to grow equally well in either peat or loam, but I prefer loam through all stages of its growth, as in it it has a less disposition to make wood and is more inclined to flower.

When the plants have attained 1 ft. in height, pinch out the points to induce the production of several shoots, which should be kept regularly trained round four or five tall sticks inserted in the pots for the purpose. Keep them now tolerably near the glass in an ordinary stove temperature day and night; or, if they can be accommodated in a temperature a few degrees cooler, all the better. From 65° to 70° at night is sufficient, with 80° in the day; but a few degrees either way matters not, provided the plants are where they can receive a little more air, with a drier atmosphere, than the generality of stove plants get at the present day. Syringe freely overhead every afternoon, and use a slight shade in the brightest part of the day, if the leaves are found to scorch, not otherwise. By the middle of July the roots will have filled the pots, when the plants can be moved to others 3 in. larger, using the soil now a little rougher than before, but of a similar nature. Keep the shoots regularly trained round the sticks; if this be not done, they are sure to get entangled. Continue the same treatment as before until the beginning of September, when syringing should be stopped; more air should be given now, and less water at the root, so as to gradually induce a state of rest. Keep them through the winter at about 55° at night, and a few degrees higher in the daytime, with no more water than will just prevent the leaves flagging. About the middle or end of February increase the temperature 5° day and night, and as soon as the plants begin to grow they may have a large shift—a 16-in. or 18-in. pot will not be too much—using the loam in a lumpy state; if destined to be grown as roof climbers, the shoots should be trained under the rafters, or in whatever position they are to occupy. Be careful not to over-water, as it will take some time for the roots to fairly enter the larger body of new soil. Give sufficient air during the day through the spring, but avoid cold draughts, syringing freely at the time of closing the house in the afternoon. As the sun's power increases give a little more heat, but no more shade than seems absolutely necessary.

Continue to train the shoots as they advance in growth, treating the plants in other respects through the summer as in the preceding year; in autumn give more air, withholding atmospheric moisture, as well as reducing it at the roots so far as can be done without injuring the foliage. Let the treatment during the winter be the same as before. Again, as the days lengthen in spring, increase the heat and give more water, which will at once induce the plants to break freely from the greater portion of the last summer's shoots, from the points of which, before they extend far, the flower-spikes will make their appearance. From this time, liquid manure twice a week will considerably benefit the plants. The syringe must now be used with caution, or it may cause the flower-buds to fall off. Do not keep the plants too hot whilst flowering, and when the blooming is over, allow them to get dry at the root sufficient to cause the leaves to flag at intervals for a fortnight or so, after which they must be cut freely back, at once turning them out of the pots, removing half the old soil, and cutting in the roots freely. This, from its free-rooting character, the plant will bear as well as an Allamanda. They may be either returned to the same pots, or, if required to fill a large space, transferred to other pots a size or two larger, after which encourage them to make plenty of growth during the summer, to stimulate which give manure water once a week. Manage through the autumn and winter as before. Again, when the spring flowering is over, repeat the cutting back and partial disrooting with renewal of the soil. Should the plants be required to flower on a trellis, all that is necessary is to take the shoots down from the position where they have been grown near the roof, and train them on the trellises before growth commences in the spring. After flowering, cut back and re-pot, and place them where the shoots can be again trained near the glass as before. It is a plant so easily raised and quickly grown to a considerable size, that it is not advisable to keep old specimens too long, younger examples being far more preferable.

This Hexacentris is somewhat subject to red spider if the syringe be used insufficiently; but if the plants be freely damped overhead every day during the growing season, as advised, this insect will have a little chance of gaining a footing. If affected with mealy bug or scale when the plants are cut back after flowering, dip and wash in strong solution of insecticide. "Field."

Plumbago capensis in 6-in. Pots.—This, when grown in pots, is usually trained over a balloon-shaped trellis, and little is thought of it until it attains an exhibition size. When planted out, it drapes a wall or rafter with excellent effect, but it is seldom one sees well-flowered plants of it in 5-in. or 6-in. pots. In the Royal Horticultural Society's Gardens at Chiswick there are just now some twenty or thirty plants of this description, remarkably showy. They are in 6-in. pots, and each plant is furnished with from two to four shoots, each of which bears in succession or otherwise from three to five handsome clusters of blossom, the colour of which no other plant in cultivation can supply. These plants are not more than from 12 in. to 18 in. high, pot included, and for vases or mixing with other plants in small conservatories, and similar purposes, they are admirable. After flowering the plants should be rested and the wood well ripened, and if dwarf plants are required they should be cut down to within a few inches of the base, when they will send out shoots in spring, and yield abundance of flowers during summer and autumn. If large specimens are required, there is no reason why they could not be grown into a bush as well as other plants, and in this way they would be much more effective than formal trellis-trained plants. —S.

HONEYSUCKLES IN POTS FOR FORCING.

All the Honeysuckles—especially the deciduous kinds—will force easily and flower freely under glass in winter and early spring, and the common species that climb about the hedges by the wayside is as useful as any for this purpose. I have had them in bloom at Christmas, and delightfully sweet they are, either in the shape of cut flowers or otherwise. In fact, although rarely used for the purpose, Honeysuckles force much easier and are more useful than many other plants that cost much more to produce. They may be readily increased from cuttings in autumn, planted firmly in a partially-shaded position. If good thick truncheons or stems can be secured in September, and planted firmly in some shaded place, they will form roots during winter, and the following season make good useful plants. A very good way of training them is to keep the stem clear of branches, but have a whorl of falling, drooping shoots from the top—dwarf standards, in fact. When the flowering is over the longest of the shoots should be cut back, so as to get a new growth from near the base to flower the following year, and when the growth is made and is getting firm, the plant should be plunged out-of-doors to ripen it. There is no fear of plants so treated not forcing well. If any plant shows signs of exhaustion at any time—a very rare occurence, as the plant is so hardy—simply pruning it hard back, and planting it out for a year or two, will bring it round.

The best time to pot up fresh plants for forcing is, of course, in early autumn, and if placed in a cold pit—just merely sheltered—and supplied with water, they will begin making new roots immediately, so as to enable them to undergo the strain of forcing. Plants lifted and placed in the forcing house directly cannot be expected to do so well. The second year, when the wood has been made under glass and ripened early, the plants will bloom earlier with less forcing. In short, it makes all the difference between the result obtained by a special preparation or training for any particular purpose or event and the mere trusting to chance without any preparation at all. In addition to their usefulness for forcing, Honeysuckles trained in the way I have suggested (and they readily and easily assume this shape) make delightful specimens to plant among climbing Roses, Clematises, Jessamine, &c., and they should be treated in what I may call a rough-tidy sort of way, *i.e.*, permitting no weeds or rubbish to grow, but otherwise leaving them pretty much to themselves.

Of course a group of this kind is not adapted for the immediate neighbourhood of any elaborate system of carpet bedding, but there are retired spots or banks in most gardens where informal groups of sweet-scented flowers will be highly appreciated. Besides it is almost impossible to cut a bouquet from those highly-wrought flower beds, however exact and beautiful they may be as works of art; therefore, it becomes a necessity to plant somewhere a number of plants for that purpose, and long sprays of Honeysuckle and Clematis for hanging over the sides of the tall drawing-room glasses commonly used now are very beautiful and effective.—"Horticultural Record."

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Harrison's Musk as a Town Plant.—This will shortly play a prominent part in the decoration of windows in town houses, little front gardens, and similar places. It grows well either in a shady or sunny situation, and in any kind of soil. It yields a mass of bright blossoms from early in summer until late in autumn. As a bedding plant, too, where Calceolarias will not succeed, this Musk would form an excellent substitute.—S.

Rivina humilis as an Indoor Wall Plant.—Although usually grown as a dwarf bush, this looks exceedingly well as a wall plant, being a continuous flowerer and berry-bearer. I recently saw a fine plant of it, covering a large space, on the back wall of a stove house with very good effect. The small, spray-like branches were covered with bunches of brilliant red berries, which, during winter, harmonise even better with the season than flowers.—J. G.

Sedum spectabile.—This, when grown in pots, answers well for window boxes, and Messrs. Rollisson are said to supply large quantities of it for that purpose.—G.

ROSES.

PRUNING MARECHAL NIEL.

Considerable diversity of opinion has been expressed from time to time as to the bsst method of growing this Rose, some asserting that it does best on its own roots, others being equally sanguine that it succeeds most satisfactorily on the seedling Brier or some other stock. Leaving these differences out of the question for the present, permit me to allude to another peculiarity in the cultivation of Maréchal Niel, and that is the time at which it should be pruned, and also how that operation ought to be performed. When in a semi-dormant state this Rose dislikes much knife work. Several examples of it planted out here two years ago, and which were unusually strong (one having made a main rod from 25 ft. to 30 ft. long last year) got infested with green fly, and in fumigating it some of the more tender leaves got injured through the Tobacco smoke. This was when the buds were about half developed last spring, and, of course, wherever the leaves were most injured the flowers suffered in proportion. After flowering, I decided on heading back some of the plants with a view to strengthening them when they began to push. I find, however, that the rods that are strongest at the base are the weakest in pushing, and one or two of the plants are so weak that they will have to be replaced; other plants of moderate growth have pushed vigorous shoots from their base. It is hard to get over facts like these, which point directly to the Rose doing best on its own roots. Had our plants been worked on the Brier or any other stock, the probability is that most of them would have died, whereas every succeeding shoot that is produced from the base is a degree stronger than its predecessor, and tends to increase and invigorate the roots. I would recommend, therefore, that all pruning, or rather thinning out, necessary in the case of this Rose, should be done when the plants are in full growth, and not before they start after flowering. The strongest shoots should be selected, and the weaker ones rubbed off with the fingers at an early stage of their growth, and if further thinning be necessary it should be done before the season of growth is very far advanced. It is so easy to propagate a few fresh plants every season that those who desire to cultivate this Rose by the simplest method should be prepared for the loss of an old plant from time to time by having young ones ready to take its place.

W. Hinds.

Planting Roses.—This, according to the author of "Roses and their Culture," is an operation requiring considerable care and patience. In the first place, the roots should be carefully examined. Every bruised portion and every damaged root must be cut clean away with a sharp-edged knife, lest they should rot and develop fungoid growth. Suckers, and even incipient suckers, on Briers, must be carefully removed. In addition, where the Manetti is the stock used, every eye below the planting line ought to be scooped out, to minimise the chance of suckers stealing up from below the soil amongst the shoots of the genuine Rose, from which, when young, it takes a keen and experienced eye to distinguish them. As soon as such are perceived they must be traced to their source, even if scooping the earth away is necessary to do so, and the intruder extirpated. One of the greatest faults in planting is, that a careful expansion of the roots is not attended to before filling in. The hole being previously prepared with some extra good soil where the roots are to be placed, the latter should be carefully spread abroad in their natural position. It will be a great encouragement to the speedy emission of new roots if they are previously plunged into a liquid compost of fine loam and powdered cow manure about the consistency of mortar. Two hands ought always to be employed in planting or transplanting—the one to manipulate the plant during the process, the other to spread out or disengage the roots and fill in and tread down the mould, so that every interstice amongst the roots is thoroughly filled up. Plants on their own roots and those worked on the Brier must never be sunk deeper than the collar, but Manetti ought to have the work from 3 in. to 4 in. below the ground level—never less than 2 in. Roses require firm planting, that is, the earth ought to be trodden down two or three times while planting is going on until the task is complete. After all is finished give a good watering, lay on a few inches of manure or other mulching maserial, and in the case of standards, put in a stake to tie them to, to as to secure them from the action of the wind.

Rose Souvenir de la Malmaison.—Few Roses are more effective just now than this, all the strong shoots of which are crowned with lovely bunches of the most delicate flesh-coloured blossoms. Beds of this kind, in which Tritomas and other autumn flowers have been planted, have a fine effect at this season of the year.—J. Groom.

THE FLOWER GARDEN.

DOUBLE AND SEMI-DOUBLE BUTTERCUPS.

Few plants are more useful and ornamental in our spring and early summer gardens than the various species of double and semi-double Buttercups. The time was—and, I hope, will be again—when our cottage gardens were full of those "White Maids of Kent" and "Golden Bachelor's Buttons," and many another lovely perennial well-nigh extirpated by the insensate rage for flaming, staring bedding plants, now happily passing away. It is scarcely necessary to sing the praises of the various varieties of Ranunculus asiaticus, Dutch, Scotch, Persian, and Turkish, and sporting every colour of the rainbow and ever so many more. I will only say that I have found the hardiest variety, and the one most easy to grow to be that known as Ranunculus asiaticus superbissimus. The flowers, though semi-double, are of very large size and very bright in colour, and the tubers are much less particular about soil and situation than the other varieties of the species, which require more or less care to cultivate, and in some localities cannot be cultivated with success at all. The finest of the double yellow species is R. bulbosus fl.-pl., the large bulb-rooted Buttercup of our English meadows. I have seen the blooms as large as a florin and as double as a Pæony Aster. On some soils the petals are slightly tipped with green, and the blooms occasionally come crown upon crown, two or three flowers rising one above the other, like three acrobats standing upon each other's heads.

Bouquet of Double and Semi-double Buttercups.

Ranunculus repens.—Of this there are two double varieties, one very neat and tidy in its growth, the other rambling and weakly, and requiring to be kept in order. Ranunculus acris fl.-pl. is perhaps the most useful of the class. Its tall, numerous-flowered heads of yellow buttons last for weeks and weeks; indeed, by cutting down the stalks before they have quite ceased to bloom you may have a succession of flowers the whole summer.

Ranunculus speciosus is a very handsome species, but on some soils it refuses to grow, and I have hitherto failed to acclimatise it in the chalk and clay of Bucks.

Ranunculus lanuginosus fl.-pl. I at present know only by name, but I hope soon to make its personal acquaintance. It belongs to a good sort, of which the more you know the better. The double yellow variety of Ranunculus ficaria (Ficaria verna) is exceedingly pretty on a bright sunny day in early spring. I have heard that there is a double form of the silvery white variety, but I have never yet had the good fortune to see it. Last, but not least, comes the beautiful little pure white Ranunculus aconitifolius fl.-pl., the "Fair Maids of Kent" of our old English gardens. I know of nothing more pleasant to look upon than a well-grown plant of this delicate and beautiful flower, and I trust the time may never come when she and her bright sisterhood will cease to ornament our beds and borders with their fair and pleasing presence.

H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

THE POT MARIGOLD.

(CALENDULA OFFICINALIS.)

There is no reason why this excellent old plant should not be "classed as a florist flower" (p. 233), but more useful is the fact that it can be had "gay" late in autumn, not merely "in the early part of summer." Truly its generic name is correct, for we have gathered flowers from it in ordinary seasons (with proper attention to leaving seedlings undisturbed and sufficiently thinned out) every month, with the exception, perhaps, of February. Our beds of it early in May were dazzling, and the flowers were double to the centre—such a blaze of colour could not, at that season, have been had with any other plant. After saving sufficient seed, we cut down the plants to the ground, thoroughly soak the beds when needful, and in about three weeks the "evergreen tufts of leaves," to use Mr. Ellacombe's words, are again in full growth, and by the end of August the second crop of flowers begins to appear. A top-dressing of fine soil helps the shed seed, which produces plants in abundance, and we will have now, I expect, a constant succession of flowers. As we have evergreen edgings to all our beds (silver variegated Vinca in this case), a bed when cut down is not strikingly bare, and the little seedlings coming on by degrees furnish fresh verdure. We have selected and saved our own seed for eighteen years. I can only add one point of interest to what Mr. Ellacombe tells us in his delightful "Plant-lore" about the Marigold, and that is that occasionally it throws out proliferous flowers, like the Hen and Chickens in the case of Daisies. It has been suggested to me that I should see if this freak would be reproduced from seed, and I saved a few and they were sown; but the experiment was not carefully carried out; I went abroad, and nothing came of the seedlings. This year I have saved a little more seed, and will try again. All who have seen our Marigold beds have begged for a pinch of seed, and all shall have some, for I am anxious that so meritorious a flower should be again a "great favourite in our gardens," to quote Mr. Ellacombe once more, and that "gardeners should no longer pass it by as beneath their notice." Had I not so many irons in the fire, I am positive that we might have got still better flowers than we have (in a florist point of view), and certainly three distinct shades of colour, viz., orange, yellow, and fawn. Foolishly, I cannot make up my mind to discard a little patch of the true single flowers, of course grown far from our double florist beds; still it would be wiser not to have such a shabby, thin flower in the garden at all. But it is very interesting to have, if possible, both the original single plant as well as its double form, and we are always collecting and completing our sets as it were. The late severe storm has been hard on the Marigolds, as well as on everything else. Salix reticulata is the only tree that has escaped, and the Crocuses and Colchicums have been laid low as impartially as the Tritomas, Sunflowers, and Dahlias. Sad havoc there has been, and such as cannot be repaired this season.

F. J. Hope.

Wardie Lodge, Edinburgh.

A Pretty Combination in the Flower Garden.—On a long border at Hutton Hall a pretty effect was secured by making a front line next the edging to the path of Polemonium cœruleum variegatum, alternated with white Violas, the two varieties used being White Swan and Lady Gertrude, the former very pure in colour, the latter much in the way of Vestal, and both well adapted for the cool, moist Cleveland district. At the back of this was the trailing Tropæolum Cooperi, a variety of medium growth, bearing bright scarlet flowers. Behind this came Viola cornuta, growing and flowering gloriously, and as yet without a rival for its peculiar hue of colour. Then came a line of dwarf Roses, with Gladioli growing among them; and in the rear a line of standard Roses, having as a background a light iron fence covered with Clematises and similar plants. On the other side of the walk was a broad sloping bank of Laurels, kept cut low, with a few ornamental trees dotted about it. This arrangement, as seen at the end of August, is a very pretty one, and by no means formal. The walk, too, was in sight of the mansion, affording a pleasant vista from that point, and the materials out of which this effective border was formed bore examination, being in excellent condition, despite the wet weather.—D.

LILIUM AURATUM IN LANCASHIRE.

It is only four years since I managed to summon up courage to plant Lilium auratum out-of-doors, L. candidum and L. tigrinum being the only sorts previously tried in this part of Lancashire. We purchase a quantity of L. auratum annually, and we treat them as follows: When the bulbs arrive they are examined, and arranged according to their sizes, the largest being set aside for pot work, and marked for that purpose; they are potted in from 5-in. to 7-in. pots, according to the size of the bulb. The pots are clean washed, carefully crocked, and a layer of Moss, with the green side downwards, is placed over the potsherds. The material used for potting is a really good turfy loam, in a mellow state, without any further mixture, except it be a dash of yellow sand. In potting, the soil is made firm under the base of the bulb, and a thin layer of sand is laid under and around it to prevent rotting. The pots are then filled with soil to the required depth, and the operation is complete. The bulbs intended for planting out are treated in exactly the same way, except that the pots used are a size smaller. All are then taken to a cold pit or frame, and laid on a thoroughly porous bottom of cinders, and covered over with sand to about 2 in. or so above the crown of the bulb; no further notice is taken of them till the young shoots push through the sand in spring. I ought to have mentioned that in potting the bulbs intended to be grown on, it would be better to leave space for 1 in. or so of top-dressing, to be laid over the young roots as they are produced at the junction of the stem with the crown of the bulb. This precaution will not be necessary in the case of bulbs for planting out, as they may remain covered with the sand till planting time, when they should be planted sufficiently deep to admit of the surface roots being covered to 1 in. in depth with rich soil, and afterwards surface-mulched with rough leaf mould or some similar material. Having thus far described our mode of treatment, it would be well to point out the importance of aspect, rich soil, and thorough drainage, where the rainfall in winter and early spring is heavy, as it is in Lancashire. I am of opinion that the day is not far distant when we shall see preparation made for planting whole beds of L. auratum. Why should we not expend the same labour and expense on the cultivation of some of those choice Lilies as we do in the case of Gladioli, for instance?

As to position, it would be well to impress on intending planters the desirability of choosing warm situations, sheltered from biting winds and from the fierce rays of the sun, which soon denudes the stems of half their foliage. I have planted bulbs in shrubbery borders under various conditions and circumstances, and I have been struck with the comparative results in each case. Where the conditions are more or less favourable to the general development of the bulbs, extremes either of drought or of wet will blight even the brightest prospects. I have counted from twelve to nineteen flowers on a single spike from bulbs planted three years ago, and in each case, where the best results are observable, the bulbs are situated in borders facing the south, with the sun's rays broken up into gentle beams by intervening trees and shrubs. The borders, too, are always in good condition, from the fact of their formation being such that they will not retain stagnant moisture, and the shade referred to shields them from excessive heat. I have noticed during the hottest part of the past summer how the stems of Lilium auratum shed their leaves even on a north aspect, and how they seemed to recover themselves after the intense heat abated. All these facts are suggestive, and serve to indicate to us certain standard rules, which seem to be of paramount importance in Lily culture. W. H.

Tropæolum Hunteri.—This is a dwarf Tropæolum of the compactum type, sent out some time ago by Messrs. Downie and Laird. It is singularly dwarf in growth, has leaves scarcely larger than a shilling, and bears numbers of small bright scarlet flowers. It is well adapted for small beds and moist districts, as in the wettest weather it does not make a very profuse growth. Like all dwarf bedding Tropæolums, it should be raised from cuttings to keep it true and dwarf, as all the compactum section have a tendency to run out when raised from seed.—D.

Salvia patens in Mixed Beds and in Pots.—I agree with all "J. G." says (p. 239) in praise of this plant; but the statement that it is quite hardy is apt to mislead. I have never found it so, nor does it appear from the context that it is so. It is simply unequalled in colour, and a striking plant anywhere. Years ago, we used to bed out this Salvia, and the greatest opponents of the massing system were never known to find fault with the fine style and matchless beauty of this fine plant. The roots were taken up every winter and stored like Marvel of Peru or Dahlias, and did remarkably well treated in this way. The first shoots were pegged down regularly over the beds. These, as the season advanced, broke up into a dense thicket of secondary spikes, and the effect was all that could be desired. The plant is also all "J. G." or any one else can say of it in the mixed border. It is likewise most useful in pots, and may be had in flower at any time from June to November. It looks well in the greenhouse, conservatory, or window garden, and heightens the beauty of almost any other flower by its contrast of habit and of colour. But perhaps it is most useful as a contrast with the Chrysanthemum in November. So many of the latter are white, orange, or buff in colour that the beautiful blue of this fine old Salvia forms a rich setting for such colours. To have plants of Salvia patens so late it is well to keep them from starting till as late as possible in spring. They may then be stopped several times till the beginning of September, after which they may be allowed to run up and flower, placing them under glass early in October. Treated thus and wintered in a temperature of from 45° to 50°, Salvia patens may be preserved in beauty till Christmas, a season when blue flowers are absent, or nearly so.—D. T. Fish.

—— As a grower of Salvia patens, I can confirm all that Mr. Baines has written (p. 265) as to the desirability of lifting its tuberous roots in autumn and storing them away during the winter, but I never allow them to become dry; in fact, I treat them as though they were still in the ground by planting them thickly in a soil bed and keeping them moist. Thus treated, they do not shrivel, a state from which they never recover. Of late years the roots have not been injured by frosts when left in the open ground, but in the spring when the young succulent shoots are bursting through the soil, they are either nipped by frost or eaten off by vermin. Plants treated like mine commence to throw up abundance of strong growth during March, and this yields a profusion of stout cuttings if needed. I grow a good quantity of this Salvia every year for the production of seed; I have a bed of it just now very beautiful, and it would be more so if I removed the old flower stalks which are producing the pods of seed.—A. D.

Select Larkspurs.—In addition to Victory, a fine double kind noticed in The Garden (p. 235), the following are, I think, well worthy of culture, viz., Agamemnon, a double variety, light blue with a white centre. Pompon Brilliant, a very dark double blue variety, in every way excellent both as regards flowers and spikes. Beatsoni, double dark blue with a fine branching habit. General Urich, a double light blue with a white centre somewhat in the way of Victory. Madame E. Genry, a single blue with a fine spike. Globe, very light single blue. Prince of Wales, a single dark blue, really a fine variety; and Grandiflorum, a single light porcelain blue with a fine spike. These I saw in bloom the other day at the Pink-hill Nurseries, Corstorphine.—Andrew Annan, *Ravelston, near Edinburgh.*

Transplanting Lilies.—I agree with "Dunedin" (p. 264) that when the flowers of Lilies become small, and the stems weakly, it is quite time to lift and replant them in fresh quarters; but, unlike him, I do not find them to be strongest the first year after planting, but the second and third years; the last I think the best. I have had some very large clumps this year where two bulbs were planted six years ago; some of them have grown 6 ft. in height, but have only had from eight to twelve blooms on a stem, whereas the third year after planting they bore from fifteen to twenty; the flowers are also smaller than those of bulbs more recently planted. I intend lifting them all this year. Some I lifted last year and replanted immediately, and they have had much larger flowers, but they have only grown from 3 ft. to 4 ft. in height, and have borne from four to eight flowers on a stem; next year, however, they will be much stronger (their successors, I mean). I have just counted the number of flowers which one clump has borne where three bulbs were planted three years ago. It consisted of twelve stems, on which there were 168 flowers. These remarks only apply to L. speciosum. —D. Uphill, *Moreton, Dorchester.*

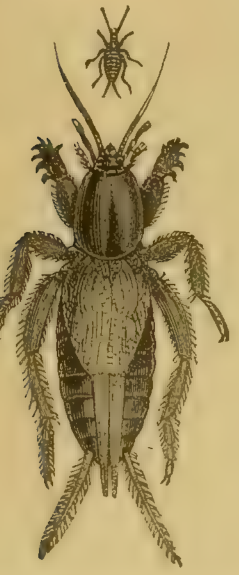
GARDEN DESTROYERS.

THE MOLE CRICKET.

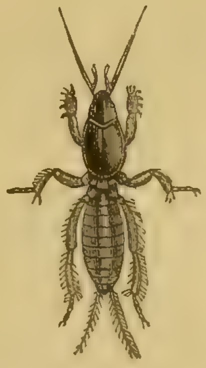
(GRYLLOTALPA VULGARIS.)

This curious insect, though fortunately not very common in this country, at times is very troublesome to the cultivator; it seems to devour the roots of almost any plant that comes in its way, and is particularly fond of those grown in the kitchen garden. Boisduval, in a paper on this insect (speaking of its ravages on the Continent), says, "It is one of the insects most injurious to agriculture and the cultivation of kitchen gardens; there are even places where it is impossible to cultivate pot herbs." Another author writes, "Happy are the places where this pest is unknown." Mole crickets seem particularly fond of damp places, such as the banks of streams and near ponds. They live almost entirely underground, burrowing and making horizontal galleries like a mole. They do not, however, like that animal, throw up heaps of earth, but may be traced by the ridges they raise in the soil; they are seldom seen above the ground during the day, but come out in the evening occasionally. Various methods have been proposed and tried for destroying them; perhaps the most certain is that of digging out their nests, which are always formed near their burrows in June or July, and destroying the eggs. Some persons in September dig holes 2 ft. or 3 ft. deep, 1 ft. or so square, and 45 ft. or 60 ft. apart in ground infested by them; these holes are filled with horse manure and covered over with earth. The insects are attracted by the heat into these holes when the first frosts set in, and can easily be dug out and killed. Fresh turves placed on the ground where they abound at night and well watered have been found a very simple and effectual trap, as the mole crickets hide underneath them and may be easily caught in the morning; this plan succeeds best in April, May, and June, particularly if the weather be dry. Boiling water poured over their burrows will kill them. Their natural enemies are few; the mole, no doubt, is their greatest foe, and probably bats and night-feeding birds kill numbers of them. Their parasites are not known. The mole cricket is a formidable-looking insect, but may be handled with perfect impunity, as it will neither bite nor sting. When fully grown it is about 2 in. long, without the antennæ and tail; the wings, when expanded, measure nearly 3 in. across. The general colour of the insect is a dark, rich brown, but its underside is somewhat paler. The head is small, and can easily be withdrawn into the thorax or front part of the body. It is furnished with a pair of stout, tapering antennæ about $\frac{3}{4}$ in. long, consisting of a great number of small joints. The thorax is $\frac{1}{3}$ in. long, oval, much rounded, and very strong and hard. The body is wide, thick, and soft, composed of nine or ten joints on either side; near its termination are two tapering organs covered with fine, short hairs; these are supposed to act as antennæ or feelers when the insect runs backwards in its burrow, which it does as easily as forwards. The wings are four in number, and of a yellowish-white colour; the upper pair are short, leathery, and much veined, and form wing covers for the lower pair, of which, however, they only cover the base; the lower wings are large and delicate, opening like a fan, and lying closed down the middle of the body when not in use. The three pairs of legs are very strong, the front pair being very peculiarly formed. They are admirably adapted for digging, being wonderfully strong, short, very much flattened and deeply toothed; the hindermost pair are formed for jumping, and are about three times the length of the fore legs. There is very little external difference between the males and females. The female in June or early in summer constructs near her burrows a smooth, bottle-shaped nest or chamber about 2 in. long and 6 in. below the ground, with a curved passage communicating with the surface, which she afterwards closes, in which she lays her eggs, some 300 or 400 in number. They are yellowish-brown, and about the size of a Mustard seed. The larvæ, or young mole crickets, are hatched in about a month, and are about one-eight of an inch long, and whitish brown in colour. They much resemble their parents, except that they have no wings. They at once begin to feed on the roots of the neighbouring plants, and keep together for the first month, at the end of which they change their skins, and soon afterwards separate. They continue to grow and change their skins occasionally, until they are about $1\frac{1}{2}$ in. in length, when rudiments of the wing cases appear, and they may be called pupæ (what would be the chrysalis state in most insects). They, however, continue to feed and grow, and when they shed their skins for the fifth and last time the perfect insects appear. This change generally takes place at the end of spring. During the summer these insects may be traced by the ridges raised by their burrowing, and by the plants withering whose roots they have attacked. In winter, as the cold increases, they bury themselves deeper in the earth, returning nearer the surface when the weather becomes warmer. The strength of one of these insects is surprising. According to Rösel, it can move a weight of 6 lb. on a smooth surface. The male, in April and May, often makes a peculiar sound in the evening by rubbing the wing covers together; the sound, unlike the chirp of the house cricket or grasshopper, is a dull, jarring noise, much like the note of the night jar or goatsucker. The female makes no sound.

S. G. S.



Mole Cricket, one month old and full grown.



Mole Cricket, half grown.

GARDENING UNDER DIFFICULTIES IN INDIA.

"Out of the frying-pan into the fire," as a friend observed the other day when I invited him to walk into my conservatory from the verandah of my house, where a maximum and minimum thermometer marked 125° and 88°. He was, however, rather surprised to find flourishing in my glass house several fine plants of Eucharis amazonica, Antigonon leptopus, Lagerstrœmia indica, Pelargonium capense, Clematis rubella, and that beautiful climber Lapageria rosea. Mine is the only conservatory in Scinde, though by no means the only hothouse, and is an experiment in which failure has as yet been greater than success. I lived for many years in the Deccan, the tableland in the Bombay Presidency, where, with a little trouble and skill, one can raise the most beautiful flowers, and on nearly any day in the year I was able to cut a vaseful of good Roses from the 150 varieties which I possessed; but in Scinde, though from November to March the climate is well suited for most hardy and half-hardy annuals, hardly anything can stand the fierce, dry, hot winds that set in with April, and blow until checked and moistened by the tail of the monsoon winds from the south-west. I thought that if I could temper this wind by building a greenhouse, the air of which should be cooled and made moist by being admitted through Grass mats kept constantly wet, I should be able to grow almost any kinds of stove or greenhouse plants. I therefore, in April last, set up my little hothouse, and gave dignity to it by calling it a conservatory. I then applied to Mr. J. Morse, of Dursley, for a few of the best zonal Pelargoniums, including doubles, tricolors, bicolors, and bronzes, a couple of Clematises, and one Lilium auratum, intending Fuchsias to follow as a second course if these succeeded—

> For though on pleasure I was bent,
> I had a frugal mind.

These plants, packed firmly (without any earth on their roots) in plenty of green Moss in a deal box large enough to allow of a firm bed of Moss 3 in. thick all round them, arrived in fair condition after being forty days *en route* per Indian Parcel Post. Out of thirty Pelargoniums and two Clematises, twenty-six of the former and one of the latter sprouted strongly a few days after arrival, the failures being confined to gold and silver tricolors, of which the plants sent were too small. For some time, during which the thermometer ranged between 80° and 105°, with wet-mat-ventilation and the glass roof whitewashed, with a sheet awning drawn over it from 10 a.m. to 4 p.m., the plants did well; but, unfortunately, there comes a time, in June, just before the monsoon bursts in Bombay, when the hot wind ceases and a still, damp atmosphere sends up the quicksilver and prevents evaporation from the mats, which no longer cool the air. So for six weeks the range of the thermometer was from 85° at night to 125° for several hours in the daytime. My Pelargoniums then one by one went over to the great majority, Madame A. Baltet proving the toughest of the lot. Now I cannot help thinking that if these plants had been received in November last, when I requested they might be sent, instead of at the commencement of the hot weather in April, they would have become well established, and would have stood even the heat I have mentioned. Strong in this belief, I have requested Mr. Morse and Messrs. Daniel Brothers to send me a fresh supply, to arrive in October next. I should be very glad if any of your readers would tell me what plants will probably stand such heat as I have described. The Lilium auratum and Clematis I received grew through it all; the former at 1 ft. high threw out one large flower, which never coloured or opened, and has now dropped; the latter is still growing, and, now rain has fallen, it stands the sun out-of-doors. Petunias, Portulacas, various Passifloras, and Ixora indica flower during all the hot weather. Gesneras, Gloxinias, and Achimenes, the corms of which I brought out with me, started well, but (before the erection of the greenhouse) could not stand the hot wind, and when brought into the half-darkened house damped off and died. Messrs. Sutton & Sons are sending me a new supply and some tuberous-rooted Begonias, which I hope will fare better. Many people have pretty gardens in Scinde, and are even now preparing borders for their seeds; but they contain only annuals and a few Roses; and though a garden of annuals which bloom from October to March is very pretty, "there are chords in the human heart," as Mr. Toots says, that vibrate more freely to a higher class of named florists' flowers; and if any of your readers can give me a list of such plants likely to stand the heat of a Scinde summer, and in winter sudden variations (out-of-doors) from 80° in the daytime to 27° at night, with such protection as I can afford them in my greenhouse, I should be very much obliged, more especially if the most suitable time for sowing or planting, and a few hints as to treatment in such a climate were added. If any one, too, feels inclined to back his opinion in a practical way, he has only to pack up a few spare bulbs, corms, or cuttings of hard, ripe wood in a thick bed of green, but not damp, Moss; put the package into an old cigar, or if liberally disposed, into a candle or soap, box, and address it to me, "Per Indian Parcel Post, Hyderabad, Scinde."

F. R. Griffith.

Ivy on Rockeries and Rootwork.—The small-leaved variegated kinds of Ivy have a pretty effect when introduced here and there amongst rock and rootwork. Being of comparatively slow growth, and of smaller dimensions than the green kinds, they are easily kept in bounds, and do not encroach upon the other occupants of such places. If trained along the lower part of rockwork they form a neat and pretty edging, affording a charming contrast to Ferns and other dark-foliaged plants. I have remarked that in a north or shady aspect the variegation is much purer and better defined than when they grow in full sunshine.—John Cornhill, *Byfleet.*

Antirrhinums in Poor Soils.—On a piece of extremely poor sandy soil, lying so high that most plants seemed to perish from want of moisture, I have noticed a fine display of Antirrhinums. They seem, indeed, to revel in a situation which is fatal to almost everything else. If the value of this plant for such situations as that just described were better known, it would be more extensively grown. There are places which tax the skill of the cultivator to furnish satisfactorily. On poor, stony, parched spots the Antirrhinum may be planted, and will give good results with but little trouble.—J. Cornhill, *Byfleet.*

PLATE CXLVII.

THE PUSCHKINIAS.

(WITH A COLOURED FIGURE OF P. SCILLOIDES.)

The species belonging to this small but beautiful genus of Lilyworts much resemble some of the Squills in habit and aspect, but differ from them, and, indeed, from all other hardy members of the Lily family, in having a small, six-lobed corona springing from the inner base of the divisions of the flower, and united into a short tube, whilst in Scilla the divisions are cleft to the base. Only three species of Puschkinias are known to us, two of which, with one variety, are now in cultivation. Though introduced many years ago, they are still rarities in many gardens, a fact to be regretted, as they are amongst the earliest as well as the most beautiful of spring flowering bulbs, and the fine effect which they produce in the open garden can scarcely be over estimated when seen in combination with the host of fine plants now in cultivation which flower about the same time. All the Puschkinias are perfectly hardy, and of the simplest culture. The soil best suited to them is a good sandy loam, and when once established they should not be disturbed, except for taking off small bulbs for purposes of propagation, which may be done whilst the bulbs are at rest. In some seasons seeds are produced, which should be sown as soon as they are ripe; flowering bulbs may be obtained in this way in three or four years. Even in such a small genus as this some misapprehension apparently exists in regard to the nomenclature, a circumstance, doubtless, owing to published figures of the species having been wrongly named. The following are the names now applied to them, viz.:—

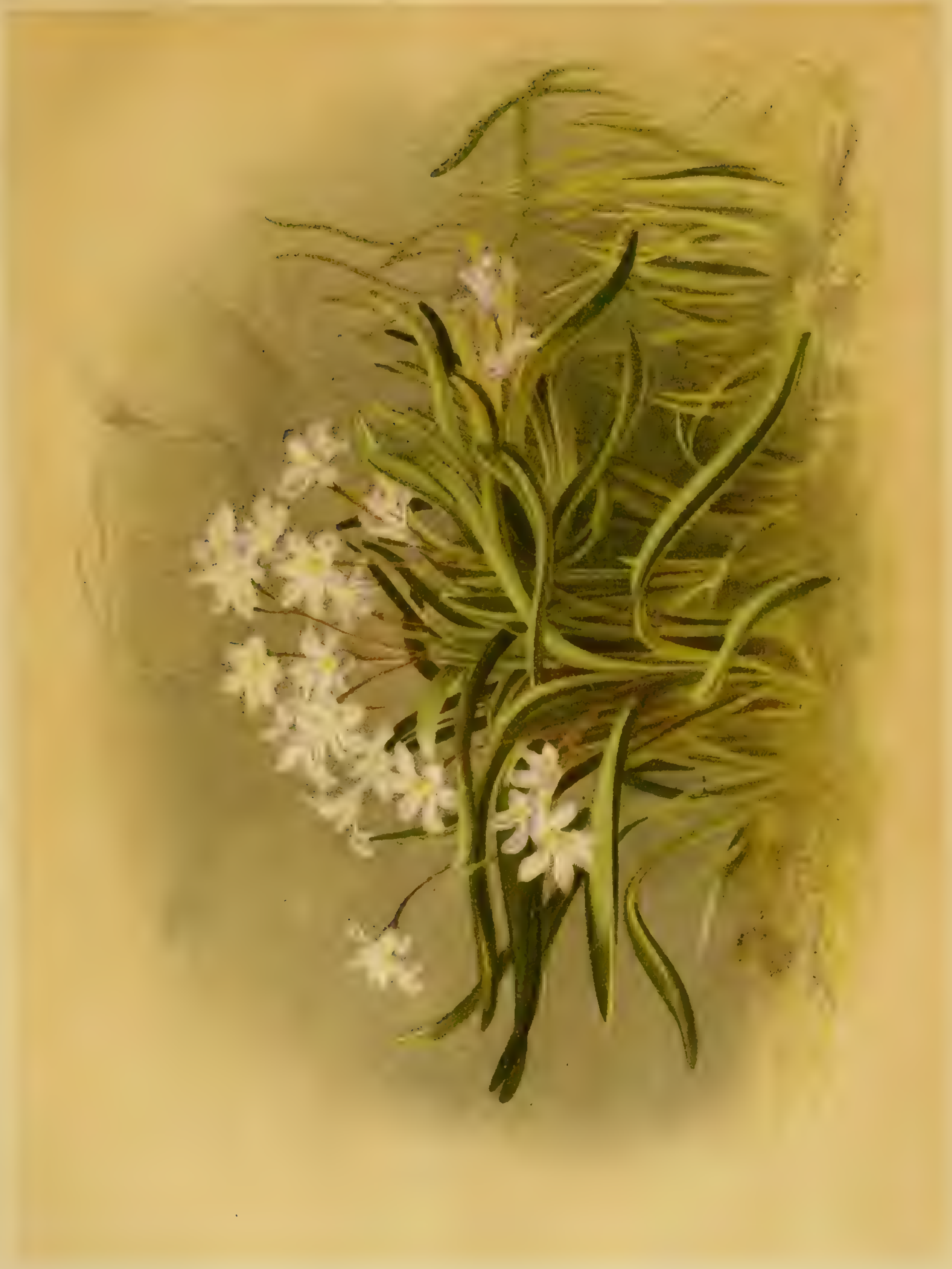
Scilla-like Puschkinia (P. scilloides).—The bulbs of this exquisite little gem are about the size of Hazel nuts, each producing a pair of leaves from 3 in. to 6 in. long, ½ in. wide, and concave. The flower stems, which are slender, bear from four to ten blossoms that measure about ½ in. across. The colour is white, delicately tinged with pale blue, especially on the tube, and the membraneous corona is white. It flowers either in March or April, according to the season. It comes from the hilly woods of the Caucasus, Armenia, and also from Mount Lebanon; hence its synonymous specific name P. libanotica.

Puschkinia sicula of Van Houtte.—It is to be regretted that a term more expressive of its beauty has not been applied to this plant. It is larger in every part, and even more beautiful than the preceding, and much resembles in habit Scilla sibirica. The bulbs, which are about 1 in. in diameter, produce two leaves from 6 in. to 9 in. long, 1 in. wide, and concave, as in the last. They are green, tinged at the base with a reddish colour. The flower stalk is about one-third longer than the leaves, and bears from five to twenty blossoms, ¾ in. across, with six pointed divisions. They are bluish-white, with a delicate pencilling of a deeper blue along the centre of each division. The corona is white, and each lobe is finely toothed. In the type the flowers are arranged in a rather lax manner on slender stalks, whilst in the variety called compacta they are arranged in a pyramidal form, and appear crowded. It is not a native of Sicily, as its specific name might lead one to infer, but, like the preceding, is of Oriental origin. It is known in some gardens as P. libanotica, and the variety as P. libanotica compacta. An excellent figure of the type is given in the "Flore des Serres," tab. 2220, and the variety compacta is well figured in an early number of Regel's "Gartenflora" under the name of P. scilloides.

Hyacinth-like Puschkinia (P. hyacinthoides).—This is a small, white-flowered kind inhabiting Kurdistan and the neighbouring districts, but not as yet in cultivation.

W.

Sunflowers.—These are generally regarded as suitable only for cottagers or for gardens to which little attention is given. As ornamental plants they are, however, not to be despised, their robust growth and commanding aspect rendering them suitable for many situations where plants of smaller growth would be quite lost. If placed where protection is afforded from high winds, and allowed sufficient space, they assume a somewhat dense, branching habit; and when covered with bloom present a very distinct, and by no means unattractive appearance. On no account should more than one plant be put in a place. Crowding Sunflowers destroys their distinctive characteristics.—J. Cornhill, *Byfleet.*



PROPAGATING.

Hollies.—These may be increased by means of cuttings almost at any time of the year; they take, however, nearly twelve months to get well rooted; therefore it is best to put them in about the end of March. The sap is then beginning to move, and twelve months hence is a good time for potting or transplanting. For all the newest and choicest sorts the best way is to select a border in the garden in a south-east aspect; dig out the soil 18 in. deep and put about 8 in. or 9 in. of clinkers or broken brick rubbish at the bottom for drainage; then fill in the soil, on the top of which it is best to place 3 in. of sandy material; press the whole down firmly, and have hand-glasses in readiness to put over the cuttings, those with portable or movable tops being the best. The cuttings may now be inserted, making a hole with a small dibber and fastening the cuttings well in. They will require water only about once a month after the first application. Keep the glass tops off all day, when the weather is favourable, till evening, when they must be replaced. Remove occasionally any leaves that may have fallen off; but if properly managed, they seldom lose any. This applies more particularly to the variegated and slow-growing forms than to the common varieties, which will do almost anywhere with a little attention. H. H.

Cutting of Holly.

Cineraria maritima from Seed.—This beautiful silvery plant may be raised in abundance from seed, but, as a rule, the produce is not so good as that obtained from cuttings, as by selecting the best for purposes of propagation, the stock in time becomes improved. Being of a woody character, the hard wood is slow to root; a good plan is to take up the best old roots in autumn and store them in boxes or pots. If the old tops be cut off in spring and introduced into gentle heat, they will produce plenty of soft growths from the base that will strike freely in the propagating pit with other soft-wooded plants.—J. Groom.

Rudbeckia hirta.—This is one of our best autumnal border plants, its rich, deep orange-yellow flowers rendering it very conspicuous. It is now beautifully in bloom in Messrs. Rollisson's nursery at Tooting.—G.

Colchicum speciosum.—This large-flowered autumn Crocus-like plant is now blooming freely in pots in the Tooting Nursery. Out-of-doors such plants do best on Grass or growing through some other green carpeting plant, which keeps the blooms clean and sets them off to better advantage than when growing on bare borders.—G.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Dendrobium nobile.—This Dendrobium, independent of its merits as one of the family of Orchids, has few equals for the production of cut flowers, where these are required continuously. The length of time that any given flower will keep fresh on the plant, and also when cut, is a matter of the first importance to those who grow plants for general decorative purposes; in both these respects there are very few plants that equal Dendrobium nobile, as the flowers will remain in good condition on the plants for three weeks or a month, and will stand in water when cut for a week or more; added to this the fact that it may be had in bloom by the use of a sufficient number of plants for half the year—say, from Christmas up to midsummer—tends to enhance its value. The length of time required in forming the season's growth, so as to admit of bulb extension to the full limits the strength of the individual plants are capable of, with the attaining of the plump, mature condition of the buds destined to flower from the upper portion of the nodes or joints formed on the pseudo-bulbs, will, to a considerable extent, depend upon the strength the plants have arrived at, as the more vigour existing in the specimens, the larger size the individual growths may be expected to attain; consequently, this will, to a certain extent, determine the length of time required to complete the growth. Plants that bloomed last Christmas, and were afterwards at once placed under conditions favourable to growth, with their wants attended to since, will by this time have their growth so far completed as to admit of water being gradually withheld; but this should not be done too suddenly, or before the pseudo-bulbs, when treated as from time to time advised, have attained that thick, stout character, with prominence of bud indicative of a disposition to flower freely, for it must be borne in mind that upon the proper treatment during the growing season is, to a greater extent, dependent their power to produce plenty of flowers than on mere size in the individual plants; and if the water were cut off too quickly, or before the growth had arrived at the condition above described, the quantity of bloom produced by plants so treated would be very much reduced. On the other hand, if the plants were allowed to remain too long under the exciting conditions of combined heat and moisture, they would again commence growth, the eyes at the base of the current season's-formed bulbs pushing shoots which would necessitate either these being sacrificed, or the plants kept on growing until such growth was completed, which, as a matter of course, would prevent the possibility of the plants blooming at the season required. It is from want of attending to the necessity of checking the plants at the right time that beginners in the cultivation of this most useful Orchid fail in flowering it freely. After growth has been completely stopped, through the withholding of water, the plants may be removed to any ordinary greenhouse, there to remain for a rest, when they may be brought into heat with a view to their blooming. Specimens of this Dendrobe that have been treated with the object of successional flowering later on must be kept growing until it is completed, for this, in common with most other Chinese Orchids, requires more air and a drier atmosphere for the development of its growth in a way to produce the full possible complement of flowers than Orchids generally.

Dendrobium moniliforme.—The nearly allied D. moniliforme, which will flower even still earlier than the foregoing, will now have completed its growth. It succeeds with similar management to D. nobile, but is not so disposed to make second growth from the base of the current season's pseudo-bulbs. It will bear keeping quite cool when dry and at rest, after which, with a comparatively little increase in temperature, it will produce most freely its beautiful pink-shaded blossoms. These Dendrobiums are of very much more use for those who cultivate flowers for their beauty and for the different purposes for which they can be used than the generality of the scarce, expensive Orchids. Their non-liability to disease, their natural free disposition to grow, and the little difficulty experienced in their increase, render them deserving of cultivation by every one possessing even a Vinery, on the front of which they may be grown, or a house in which Cucumbers are grown during the summer, in the lightest position of which the Dendrobiums may be placed whilst making their growth, or, in fact, anywhere where an intermediate temperature is kept up during the summer will grow them satisfactorily, as in such they will usually do better than when confined to the—for them—too moist atmosphere of an ordinary Orchid house.

Dendrobium pulchellum.—Another cool species is one of the smallest growers, but very beautiful, and one of the best basket plants that can be grown, in which position its semi-transparent flowers are seen to the best advantage. It will, by this time, in most cases have finished its growth. This plant, although, like the preceding, liable to be urged into second growth if kept too long moist and warm after its season's growth is complete, yet the latter condition must be fully reached before water is ceased to be given it, otherwise it will flower sparingly or not at all. When grown under the most favourable conditions, and fully matured, the pseudo-bulbs will assume a yellowish-green colour, so plump in appearance that the skin seems almost ready to burst, and the future flowering eyes quite perceptible. As soon as this stage is arrived at water should at once be entirely withheld, the plant placed in a temperature of from 40° to 45° during the night, with a moderate amount of air in the daytime, kept completely dry until the winter is far advanced, under which conditions it is one of the most satisfactory subjects to grow, producing hundreds of its lovely, though somewhat short-enduring, flowers.

Dendrobium chrysanthum.—This useful, free-growing Orchid, like the foregoing, has no particular season of flowering, but will, according as it is treated, bloom during the summer or autumn. In most cases the blooming will now be over and growth commenced, during which time it must have plenty of moisture at the roots.

Dendrobium Devonianum, Falconeri, &c.—These, with D. Cambridgeanum, D. Wardianum, the different varieties of D. densiflorum, D. Farmeri, and D. heterocarpum, the forms of D. Pierardi, D. transparens, and D. chrysotoxum, although they do frequently under hot treatment, yet they will generally succeed better in a somewhat lower temperature than the plants experience in the hot plains and valleys of India, and they will almost invariably be found to flower freer when not grown so hot as there. There is a very considerable difference in the length of time required by these to complete their growth, both as regards the different species and the strong or weaker condition of each individual plant. The observing cultivator will see at a glance when each plant has quite finished its growth, that is, when the terminal leaf to each young bulb is fully developed, and has acquired its full solidity, with the accompanying plump state of the pseudo-bulb that always exists under such conditions as are naturally required by the plant. When this state is arrived at, then is the proper time for withholding water, gradually drying off and putting them to rest, for though most of these are not so easily excited into a second growth as the species first treated of, still, if kept too long in a growing house, the buds at the base of the young bulbs may be induced to push, the result of which would be their destruction, to the serious injury of the progress which the plants should make the ensuing year.

Warmer Dendrobes.—Such species as D. Bensoniæ, D. chrysotis, D. cucullatum, D. Dalhousianum, D. macrophyllum, D. lasioglossum, D. lituiflorum, D. Gibsoni, and D. crassinode are generally found to succeed better with more heat, making stronger growth. Most of these will not yet have fully completed their bulbs, and should be duly supplied with heat and moisture until their pseudo-bulbs show from appearance, such as described amongst the species previously mentioned, that their growth is so far matured that they may be gradually dried off.

Cypripedium insigne.—This very useful, free, autumn-flowering plant may be grown by any one having a Vinery, where, during the growth of the Grapes, it is kept a little closer than an ordinary greenhouse; but in such neither the completion of the summer's growth nor the blooming will be so early as when cultivated in something more of an intermediate temperature. Under the latter conditions its latest-formed leaves will be approaching maturity, and a little less root moisture may be given it, but it must not be dried up in the manner necessary with plants that form pseudo-bulbs. If it has been grown in an intermediate-house temperature, and now kept on with proportionately similar heat, it will flower comparatively early. Where sufficient plants exist to give a succession, a portion may now be kept cooler, by which means they will come into bloom later, succeeding the earliest flowered.—T. Baines.

Housing Tender Plants.—The time is now approaching when there is usually the greatest scarcity of flowers, as the outdoor beds and borders from which, during the summer and autumn, so many were furnished to mix with those grown under glass, may be destroyed by a single night's frost; consequently, everything in pots that has been out-of-doors, and which by removal to the greenhouse can be induced to flower longer than it otherwise would do, should be at once taken under cover. For this purpose pink or scarlet Pelargoniums that have done duty through the summer with their pots plunged in vases should be taken indoors, where, with a little attention, they will bloom freely for a considerable time. Such of these plants as have received especial preparation by growing them on in 6-in. or 7-in. pots fully exposed to the sun, so as to induce that ripened condition which is necessary to insure the freest disposition to flower with the least leaf growth, should be moved to the lightest position in the greenhouse, or a pit where they can be kept a few degrees warmer than in an ordinary greenhouse, will be still better. Elevate them as near to the roof as possible, and if the pots be very full of roots manure water once a week will assist them. Thus managed they will keep on blooming a good portion of the winter.

Tropæolums.—Any of the free-blooming, climbing varieties of Tropæolum are very serviceable for the production of flowers through the winter, and for this purpose they are often trained up pillars or rafters; so managed they bloom profusely, and produce a cheerful effect, but they are not so useful as when trained to a few sticks inserted in the pot, as in this way they can be moved about to whatever place is most conducive to their blooming. If they can be accommodated with a temperature of about 50° at night, with plenty of light in the day, they will keep on flowering for months. The length of stalk possessed by each bloom, and their enduring capabilities when cut in water or wet sand make them very useful for small vase decoration; where employed in limited quantities mixed with white Camellias, Azaleas, and similar light-coloured flowers, they are very effective. Those with limited glass accommodation for growing winter flowers will find that, by employing free-growing, continuous-blooming plants such as the above, they can have a much more plentiful supply than by attempting the growth of subjects that are rarer and more difficult to cultivate.

Gladioli that were kept long out of the ground in spring, with the view of their being potted for flowering in the greenhouse in autumn, should now be taken up and potted. If the ground be at all dry, give them a good watering previous to their being got up, otherwise the roots are certain to get broken. Do not use larger pots than will hold the roots without undue pressure, say 6 in. or 7 in. in diameter. Any ordinary garden soil will do for them. The usual advice, not to give water for some days after potting, must not be adhered to in the case of these and anything of a similar character, otherwise the foliage would be certain to suffer. As soon as they are potted give as much water as will moisten the soil, and put to each a neat stake to support it. Place them in a cold frame, Vinery, Peach house, or wherever room can be found where there is no fire-heat. Thus treated, they will come into flower in succession for some weeks, and are very useful for greenhouse or room decoration. Expensive sorts are unnecessary, but such should be selected as naturally flower late.

Calla æthiopica.—Those that were divided and planted as recommended in the open ground in the spring will now be good, sturdy plants with short leaves, much superior to those kept in pots. They should at once be taken up and potted. As they are all but aquatic in habit they need a liberal supply of water continuously, on which account they must have the pots well drained, for although requiring so much moisture, they will not do well if the soil become sour. If a portion of the plants be wanted in flower early, that can be accomplished by putting them in a little warmth. Plants of all kinds in frames and pits that are in any way susceptible of cold, and that are fully exposed during the day by the lights being drawn off, should have them replaced every evening, particularly on clear, bright nights, which are more likely to be the precursors of a low temperature than when the sky is clouded. This for some weeks will be sufficient protection without having recourse to covering with mats, the presence of which when not needed has simply the effect of restricting the full amount of light.

Flower Garden.

Bedding Plants.—In cases in which it may have been difficult, or even impossible, to obtain at an earlier period a sufficiency of cuttings of any variety of bedding plants, this deficiency may now be made good, and the propagation of all such plants should be brought to a close as speedily as possible. Even bedding Calceolarias, which are always found to succeed best when the cuttings are inserted somewhat late, may soon, or even now, be commenced with. These plants are most successfully propagated in cold pits or frames, either in pots or otherwise. If pots are used they may be some 8 in. in diameter, and should be well drained, and the soil may be composed of one-half leaf mould finely sifted, while the other half may be sharp river or pit sand, which will answer the purpose quite as well as the best silver sand. They may be wintered in the pits or frames in which they have been struck, and will of course require the protection of mats, &c., when the weather is severe. Treated thus, they will generally be found by the end of March to be in good order for transplanting into temporary pits or trenches, where they can have the necessary protection which they may require during very severe weather; and from such quarters they may be safely transferred to the flower beds early in May. It will still be necessary to keep lawns constantly mown and rolled, although mowing will be less frequently necessary than it has hitherto been. Leaves have this season commenced to fall sooner than is generally the case; gravel walks must, therefore, be frequently swept and afterwards well rolled in order to secure solidity and smoothness of surface.

Indoor Fruit Department.

Vines in pots, which were thoroughly ripened a month ago, may now be placed in a gentle heat, *i.e.*, if Grapes are wanted in March and April; select those showing plump prominent eyes and well ripened canes for the first batch, using Black Hamburgh in the dark section, and Royal Muscadine in the white division. Wash the canes with a hard brush, employing soft-soapy water, and clear the surface-soil away well down about the roots; then fill up to within 1 in. of the rim of the pot with a compost consisting of cow and horse manure mixed with a little fresh loam. The roots run freely and feed greedily in a compost of this kind, and at every application of water much valuable matter is washed down to the lower roots. Early growth is much facilitated by the pots being plunging in some fermenting material in which a bottom-heat of 70° can be maintained —say, here and there in a Pine bed where there is room. Where such means are unavailable set the pots on the top of hot-water pipes. A temperature of 60° by day, and 50° at night will be found to be sufficient for the first fortnight. Dew the canes overhead both morning and afternoon. The object and advantage of forcing pot Vines is to be able to cut new Grapes at Easter, or at any other special time, when only a few are required, and when a large Vinery-ful would be too many. Vine culture, in pots, also saves Vines permanently planted out, which often suffer much if forced very early. Permanent Vines, if started into growth for a succession of years, in October or November, soon succumb to such unnatural treatment. The roots, on which so much depends, fail to act in company with the top, and failure is the inevitable result. Pot Vines may be conveniently accommodated in an old corner of any stove, and when eight, ten, and twelve good bunches can be obtained from them, the original cost and after attention are fully repaid.

Melons.—The season for frame Melons is now all but over. In pits, however, the plants for late fruiting should be vigorous, and previously prevented from setting their fruits till now, when, with great care, a night temperature of 70°, judicious applications of tepid water, and slight syringings on fine days only, they will ripen a good late crop. Mulch the beds with leaf-mould or old Mushroom manure to prevent them from drying too quickly. Do not give much water to fruits that are fully swollen, or that are ripening, as such would be apt to cause the fruit to crack, and deteriorate its flavour.

Cucumbers.—Winter fruiting plants of these should now be establishing themselves in the beds, and must not be too much syringed. The soil for late Cucumbers should not be quite so rich as for summer fruiting ones. Maintain a night temperature of 70° to 75°, and pick off any leaves affected by thrips, and use sulphur to counteract mildew. All fruits for seed should have been secured earlier in the season than this, for by keeping them thus late the plants are considerably weakened. Avoid, too, overcropping, and give some weak manure water to fruiting plants.

Hardy Fruit.

Most kinds of Apples and Pears will soon be ready to gather, and the moment they seem ripe enough let it be done, as we may still expect high winds, and ungathered ripe fruit will be either destroyed or fit for use only as windfalls; on the other hand, none should be gathered until really fit to house. Pears, especially late kinds, if gathered too soon are rendered worthless, as they never ripen to be fit either for cooking or dessert, but shrivel and become hard and dry. A good criterion by which to decide whether a Pear is fit to gather or not is to gently raise the fruit, and if it parts readily from the tree, it is ready to gather. Another plan is to cut open a fruit, and if the pips be brown, the crop may be gathered. The same rule applies to Apples, though none but the very late kinds suffer from early gathering to the same extent as Pears. After housing the fruit the room will require to be freely ventilated for a week or two until the fruit is dry and inured to the temperature of the house; sudden fluctuations more than anything else induce damp and decay. Fruit showing the slightest signs of decay should be instantly removed, for if left an atmosphere is thereby engendered inimical to the good keeping of the remainder. If space permit let the fruit be placed on the shelves in single layers; any extra labour involved in so placing it will be more than repaid by the dispatch with which it can be examined in order to detect bad fruit. Peaches and Nectarines, and also late Plums, should be gathered a day or two before they are fully ripe and placed in the fruit room. I cannot account for it, but such is the fact, that fruit so gathered is much more highly flavoured than when used direct from the trees. As soon as the latter are cleared of fruit wash well any that are affected with red spider or mildew. Plenty of clear water applied with force for the former, and soapsuds for the latter, are two simple and effectual remedies. Raspberries may now have all their old fruiting canes removed and the new ones finally thinned out in order that those for next season's fruiting may derive the fullest benefit from what sunshine we may yet be favoured with. After thinning let the ground about them be "pointed" (not dug deeply), then mulch thickly with well-decayed stable manure. The fruit tree planting season is at hand, and preparation should therefore be made for new plantations, and for lifting, root-pruning, and renovating any trees requiring such operations.

Kitchen Garden.

No cultivator who aims at producing first-class vegetables in all seasons ought to be satisfied with less than from 2 ft. to 3 ft. in depth of good soil. It may not be possible to secure this in some gardens all at once, but if this object be kept steadily in view, and as far as possible acted upon, a steady and progressive improvement will certainly take place, which will soon show itself in the improvement of the crops. The two principal ways of increasing the depth of the soil available for the roots of plants are, firstly, deep trenching in autumn; and, to this end, every spare moment that can be abstracted from ordinary routine work should be occupied in turning up deeply every vacant piece of land, and throwing it up roughly, to expose as large a surface as possible to the action of the atmosphere. Where the sub-soil is decidedly bad, be content with bringing up only 1 in. or so to the surface, but stir the bottom up well with a strong steel fork; even this will let in the air and allow the water to percolate more freely through it than before, and will make it more suitable for bringing to the surface at the next trenching. In this way a vast improvement might be gradually made in many gardens, and I am confident that if the practice was generally carried out, the result in improved crops in all seasons would be patent to even a casual observer. "Where there's a will there's a way," and any cultivator once impressed with the necessity of deep culture will find a way to accomplish his object—gradually and slowly it may probably be, but none the less surely on that account. The second mode of deepening and improving a poor soil is by adding to the surface everything that can be obtained that has any value either as a manurial or mechanical agent; and there are so many substances (often looked upon as valueless) about gardens, especially at this season, which, if properly utilised, would be of the greatest value in any persistent scheme of improvement. All refuse vegetable matter, whether living or dead, should be carefully treasured up, as it contains within itself the nucleus of future crops. There is such a number of substances usually called rubbish, such as the cleanings of ditches, trimmings of banks, roads, and hedges, all so easily obtained as to render the improvement of even a bad soil not so difficult a matter as at first sight it might appear. Amongst the most useful of mechanical agents for ameliorating a heavy soil may be mentioned all kinds of ashes and charred earth or clay, lime and mortar rubbish, and the *débris* from old buildings when taken down; whilst light sandy soil cannot have anything so beneficially applied to it for improving its staple as a good dressing of clay spread over the surface in autumn after trenching, and, after exposure to the action of the weather all winter, lightly forking it in in the spring before cropping. Where French Beans are in demand all the winter, two or three dozen pots may be planted to succeed those planted in frames; by making successional plantings every three weeks or so, the supply will be kept up. A position near the glass will be requisite, as also a moist atmosphere and a night temperature of not less than 60°. 8½-in. pots are a handy size; they should be half filled with good rich soil, and about five Beans planted in each pot. Cover the Beans about 1 in. deep, and earth up when the plants are up and have made some growth. The Newington Wonder, although small, is a very useful Bean for early forcing; if well fed with liquid manure, and if all Beans are picked off when fit for use, it will continue bearing for a long time. Cut clusters of Tomatoes, and hang them in a dry, airy house—this will give them an opportunity of maturing later-set fruit.

Earthing-up Celery.—The general crop of Celery for winter use should now be examined; all suckers should be removed, as well as a few of the smallest outside leaves, and then the foliage should be tied together loosely in the manner recommended in the case of the earliest crops; after that a thorough soaking with manure water should be given, and then about 6 in. of soil from the ridges should be drawn to the plants, an operation which not only keeps the leaves from being broken down by wind, but tends to promote growth, and, where too much soil is not applied, it has no bad effects in preventing rain from reaching the roots. The Celery maggot is now, in some places, more than usually active; it may easily be detected by the brown patches which it produces on the leaves. The only remedy is crushing it between the thumb and fingers. The Cabbage caterpillar is also now attacking late Cauliflowers; they get into their hearts as soon as they begin to form, and for these no dressing can be applied that would not spoil the heads, consequently hand-picking must be resorted to, otherwise the larvæ will continue their work of destruction until the occurrence of sharp frost.

Extracts from my Diary.

September 30.—Potting old plants of Cloth of Gold, Golden Chain, and Flower of Spring Pelargoniums to provide cuttings in spring should they be wanted. Putting in cuttings of Blue Perfection and Golden Gem Viola in sharp sandy soil, under hand-lights, in a shady border. Putting Fraser's Broad-leaved and Green-curled Endive in cold pits as they become vacant; also Black-seeded Brown Cos Lettuce. Giving Strawberry beds a good coat of manure, and forking it in. Getting border under a north wall ready for Calceolaria cuttings. Taking up one portion of Beet-root, and storing it away for use in case of frosty weather. Gathering Coe's Golden Drop and Reine Claude de Bavay Plums. Watering Pine-apples throughout, and tying up the fruit where necessary.

October 1.—Putting in Calceolaria cuttings under hand-lights against a north wall. Getting Camellias, Myrtles, and other plants under cover. Earthing up Celery when the ground is dry and in workable condition. Cutting off what Grapes are left in late Black Hamburgh house, and putting their stalks in bottles of water in which have been placed a few pieces of charcoal. Gathering Louise Bonne of Jersey, Jersey Gratioli, and Marie Louise Pears; also Cellini, Cox's Pomona, and Stirling Castle Apples, and laying them singly on clean Wheat straw in fruit room. Weeding Box edging, and cleaning garden walks to make them fresh for the winter.

Oct. 2.—Potting rooted cuttings of Tomatoes for succession; and putting in another batch of Hathaway's Excelsior. Clearing off old Peas, and getting the ground ready for manuring and trenching. Hoeing and weeding amongst the autumn-sown Onions whilst the ground is dry and the weather fine. Turning Gravel walks, and laying down new gravel where required. Tying up Lettuces, and covering up Endive to blanch. Clearing off all decayed vegetables, and carrying them to the rubbish heap to burn. Gathering Passe Colmar, Doyenné du Comice, Forelle, and Flemish Beauty Pears.

Oct. 3.—Potting Flower of Spring and Dr. Lindley Pelargoniums; also Hyacinths, Tulips, and Narcissi. Moving Primulas and Cinerarias to warmer quarters. Thinning Spinach, and weeding and hoeing between the rows. Making a new Mushroom bed, and turning more manure for another. Looking over all Cauliflowers and turning down the leaves over such as have formed heads, to protect them from frost. Gathering all dwarf and Scarlet Runner Beans and putting them in 4-in. pots set in pans of water with a little charcoal added for keeping till they are wanted; also treating all Vegetable Marrows in the same way.

Oct. 4.—Potting Christine and Jean Sisley Pelargoniums; also a quantity of Echeveria glauca. Planting all spare borders with Wheeler's Imperial Cabbage plants 8 in. apart. Preparing temporary frames in which to prick out Cauliflowers; also a quantity of black-seeded Brown Cos Lettuce. Giving late Peach house inside border a good soaking with water.

Oct. 5.—Sowing Mustard and Cress in boxes indoors. Potting a few Lobelia pumila and dwarf Ageratums. Putting in more Calceolaria cuttings under hand-lights. Getting up a large quantity of the most forward Cauliflowers, and laying them in an open shed. Clearing leaves from the pleasure grounds and walks and rolling the same. Gathering all unripe Tomatoes, and placing them in a sunny position indoors to ripen. Fruits in use for dessert consist of Pine-apples, Grapes, Pears, Plums, and Apples.—W. G. P., *Dorset.*

Sowing in Drills *v.* Broadcast.—Although the sowing of seed in drills has well-nigh superseded broadcast sowing with all crops in kitchen gardens, yet one occasionally finds broadcast sowing practised under the plea that it saves labour, and that more produce will result from a given area by sowing broadcast than by the drill system. Experience, however, tells me that the balance is undoubtedly in favour of drills, for, although the actual labour of sowing any crop may be reduced by the broadcast plan, yet the labour involved in keeping the crop free from weeds is altogether in favour of drills, for as soon as the young plants are up sufficiently for the rows to be visible, the intervening spaces may be lightly hoed; whereas in broadcast sowing the crop and weeds must grow together until it is possible to set the hoes in motion with anything like accuracy, and if showery weather set in a tangled mass is the result, that well-nigh defies the efforts of the cultivator to get rid of without damage to the crop. Besides, there can be no question as to which mode of cropping has the best appearance, and even in the kitchen garden this ought not to be a secondary consideration.—James Groom.

GARDEN BOTANY.

(Concluded from p. 272.)

Collective Fruits.—As already explained, these result from more than one flower, and the simplest form is offered by some species of Honeysuckle, in which the ovaries of two flowers unite, forming one fruit (fig. 603). The fruit of the Sweet Chestnut is also in one sense collective, inasmuch as the prickly involucre, which seems at first sight to be the counterpart of the prickly capsule of the Horse Chestnut, encloses the fruits of several flowers (figs. 604 and 605). See what is said respecting this in the paragraph treating of the involucre. The Globe Artichoke is a collective fruit, and the flower-heads of all other Compositæ become such (see fig. 606), though there is no absolute union of the fruits of each separate flower constituting the head. In external appearance, the Mulberry (fig. 607) closely resembles the Raspberry, &c.; but, as has already been explained, it is an inflorescence, consisting of numerous flowers crowded together. As it matures, the persistent perianths become fleshy, and eventually cover the relatively small seed-vessels or true fruits. The famous Bread Fruit belongs to this category, and the Fig also; but in the latter the floral receptacle is a hollow body enclosing the

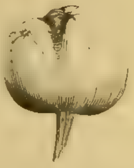


Fig. 603.—Collective or aggregate fruit of Lonicera Xylosteum, the result of two coherent pistils.

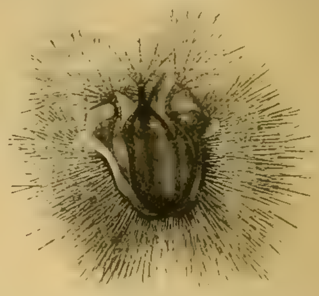


Fig. 604.—Collective fruit of Sweet Chestnut. Several inferior fruits contained within a prickly involucre (cupule).

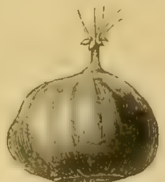


Fig. 605.—One of the single fruits of Sweet Chestnut removed from the cupule.

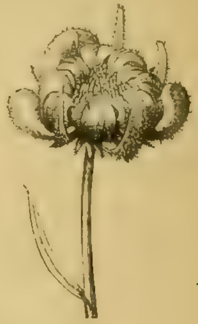


Fig. 606.—Collective fruit of Marigold.

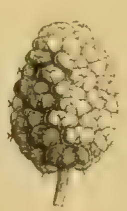


Fig. 607.—Collective fruit of Mulberry, the result of several flowers crowded together on a common receptacle.

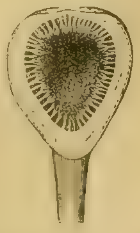


Fig. 608. — Section of collective fruit of Fig.

flowers. Figures 608 to 610 illustrate the nature of this fruit in the young state. The nature of the fruit of the Pine-apple and of some other Bromeliaceæ is more easily understood, as the separate flowers are large enough to be seen by the unaided eye. We have only one more kind of collective fruit to mention, and that is of the Coniferæ, which presents various modifications, Cupressus (fig. 611) and Pinus (fig. 612) for examples.

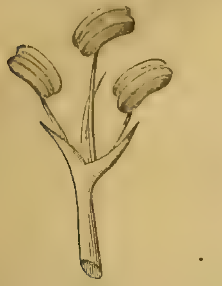


Fig. 609.—A male flower of Fig removed from the receptacle. Much enlarged.

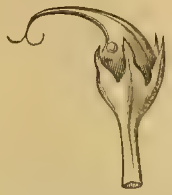


Fig. 610.—A female flower of Fig removed from the receptacle. Much enlarged.

This brings us to the end of our review of the external morphology of plants to the seed, to that part of the subject with which we started; and to the student who has not been able to follow us at all times we would say recommence, because what was unintelligible the first time of reading may appear clear the second. Another observation we would make. It is this: that in botany, as in all other subjects, we must know the alphabet before we can read. Learning the alphabet may be a tiresome task, but the pleasure of reading is inexhaustible, for the book of Nature is endless.

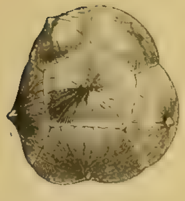


Fig. 611.—Collective fruit of Cupressus.

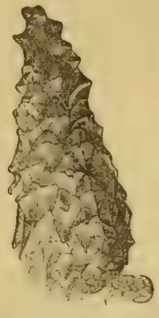


Fig. 612.—Collective fruit of Pinus sylvestris.

W. B. Hemsley.

THE INFLUENCE OF AGE ON SEEDS.

At a recent meeting of the French Société Centrale d'Horticulture, M. P. Duchartre gave an account of some very curious observations on the influence of age in a seed on the flower and fruit-bearing powers of the future plant made by Signor Ferdinando Cazzuola, of Pisa, and embodied by him in a paper entitled "The Latent Life of Plants in the State of Embryo in Old Seeds," published in the April number of the "Bulletino della Reale Società Toscana di Orticoltura." These observations are the result of many years' experience on the part of Signor Cazzuola, who seems to have commenced his experiments at a very early period. For years past he has been in the habit of sowing Cucumber and Water Melon seeds, one half of which had been recently gathered from the plant while the rest had been kept for some time. The plants produced from the fresh seed each bore only one, and very rarely two, fruits; whilst those grown from the old seed gave three or four, and at a much earlier period. In the case of some Colocynth plants (Cucumis Colocynthis) produced from very old seed, the flowers were all females; whereas, when grown from fresh seed, they were all males. Last year Signor Cazzuola repeated this latter experiment, but he did not obtain a single fruit. A Gourd plant (Cucurbita Pepo), produced from a very fresh seed, which was trained over the roof of a portico, grew to the length of between 60 ft. and 70 ft. in thirteen weeks. On this enormous length of stalk were produced forty-seven male flowers, and, lastly, a single female flower, which was developed so late in the season that the fruit which succeeded it had not sufficient time to ripen fully. On the other hand, a plant grown from an old seed of the same variety only reached a length of 26 ft., and produced four large fruits early in the season. The results of similar experiments made with other monœcious species of the Cucurbitaceæ ended in the same manner. As for the diœcious Cucurbitaceæ, Signor Cazzuola states that he has proved that the Begonia dioica produces only 5 per cent. of female plants if recently-gathered seeds are used; whereas, if we sow old seeds, the proportion of female plants amounts to 50 per cent., and even beyond that figure. The same observer states that having sown fresh seeds of the Thladiantha dubia, out of 100 plants he only found a single female, and that was so weak that it very soon withered up and died. Besides the family of the Cucurbitaceæ, Signor Cazzuola asserts that with woody diœcious plants he obtains nothing but males when fresh seeds only are sown, but that if old seeds are used he gets 40 and 50 per cent. and even more of females. He gives several examples of this phenomenon as observed by him in experimenting on the Gingko, the Alaternus, the Holly, the Pestachio, the Mastic tree, &c., and Signor Cazzuola thinks that there is only one conclusion to be drawn from his experiments, and that is, that the age of the seeds sown has a great influence on plants bearing hermaphrodite flowers, which are much more vigorous but less fruitful when they are grown from fresh seeds. His experiments in this direction have been made on Haricot Beans, Broad Beans, Peas, Lupins, Chick Peas, and other leguminous plants, as well as on several of the Solanaceæ. In order to explain these facts, Signor Cazzuola, as the title of his paper would lead us to suppose, seeks for a reason in the hypothesis of the existence of a latent vitality in the embryo, which, by becoming prolonged, weakens the embryo and makes it more fruitful. M. P. Duchartre, in conclusion, said that it seemed to him that Signor Cazzuola's hypothesis only partially explained the facts as stated by him, besides which he could see many objections to it. At the following meeting M. Arnould-Bulland stated that M. Laizier had made several experiments on Melon seeds, the results of which did not seem calculated to confirm the hypothesis put forward by Signor Cazzuola. Having procured a number of Melon seeds which had been gathered yearly during the preceding ten years, he sowed the seeds produced in each year separately. The seeds gathered in the years 1868, 1869, 1870, and 1871 did not germinate. The proportion of germinating seeds became larger as the sowings were made with the more recently-gathered seeds, but the plants that they produced did not present any very remarkable differences as far as the proportion of flowers of the male and female sex was concerned. M. A. Malet at the same meeting said that, basing his opinion upon long practice, he always looked on fresh seed as the best for sowing. He had never remarked the slightest difference in the number of male or female flowers in the monœcious species, no matter whether they were produced from fresh or old seed, and he maintained that they showed no difference in this respect. As for the ordinary kitchen garden species, the plants grown from recently-collected seed were often much more vigorous and showed a greater tendency to increase in length than those produced from old seed. If they are Cucurbitaceæ they must, for this reason, be allowed to grow as long as possible, and the female flowers should be fertilised by artificial means. To sum up, he advised that in every case recently-gathered seed should be sown instead of that which had become stale. C. W. Quin.

Paphinia cristata.—We saw the other day, in Messrs. Rollisson's nursery at Tooting, a remarkably fine variety of this Orchid—one which, when better known, will be appreciated by those even who care little about the type.—G.

THE KITCHEN GARDEN.

ASPARAGUS CULTURE AT ARGENTEUIL.

Your offer of prizes for the best Asparagus grown in England on the Argenteuil model and other causes induced me to pay a visit to the head-centre of Asparagus culture in France. Argenteuil may be said to owe its wealth and fame to this special industry. There, too, other vegetables and some fruits are grown well. Among the latter, Fig culture holds a prominent place, most of the plants being grown as low bushes, and the tops being buried under ground in winter. But Asparagus growing is the main pursuit; and doubtless this is one, perhaps the chief, reason why it has reached such perfection. The concentration of skill and force tells on Asparagus culture as in other matters. Be that, however, as it may, Argenteuil Asparagus has a special and exceptional value in the Parisian and other markets of France and other countries, including England. It is not the first in the French markets, but its advent is hailed by a sort of ovation. The horses and vans are sometimes dressed up as for a festival that bring the first gatherings to the Halles Centrale or other markets, and gentlemen take off their hats and cheer as they see the first fruits or gatherings of the Argenteuil Asparagus arrive in Paris. And the "Grass" is worthy of this or any amount of honour. It is useless to characterise it as splendid, magnificent, &c.; neither of these adjectives give any idea of its wonderful size and general excellence of quality. To add that it is fresh, crisp, and sweet when newly gathered is only to write the merest truisms. It is also uniformly good. The entire district seems to have reached to the highest level in this special culture; and the quantity grown is also enormous. I saw on one morning at the Halles Centrale alone ten times more Asparagus than I had ever seen before in my life in all the markets or gardens I had ever been in. The stalls, streets, and squares were blocked with Asparagus, each stick averaging from 3 in. to 6 in. in circumference, and some of the hundreds ranging in price from 4s. to 12s., the latter being quite a formidable affair to lift. It is not necessary to describe further the quality of the Asparagus, as you have promised full descriptions and drawings of it; and the fact of its being all blanched but the tips of the shoots has frequently been adverted to in The Garden. Neither is this the time nor place to discuss the relative merits of blanched or green "Grass." Our object now is simply to point out, if possible, how the Argenteuil Asparagus is grown to such an enormous size. Four things struck us on the spot as contributing most powerfully to this result—the selection of sorts, the preparation and careful culture of the soil, the distance between the plants, and the practice of earthing up in the spring and unearthing, to put the matter pithily, in the autumn.

The question of varieties is rather a puzzling one, it being generally held by most authorities that all varieties of edible Asparagus are but forms of one species—the Asparagus officinalis. Be that as it may, the French growers recognise several different varieties, and attribute great importance to the selection of the best. I called at the Jardin des Plantes the day before my visit to Argenteuil, and was much interested in the collection of Asparagus. Several were climbers, and several dwarf sorts, but the following looked superior in strength and seemed likely to be as useful for culinary purposes as A. officinalis. The following were growing there in the same bed, namely: A. verticillatus, tall and strong, with a slight tendency to a creeping habit; and A. albus, white. This was marked Algerian Asparagus, and varied little from the common, except in the fact that its stems were almost white. This was much stronger and more robust than the common Asparagus beside it; and on enquiring afterwards of a gentleman who had been much in Algiers about the size and quality of this Asparagus, he said it was not nearly so large there, in his opinion, nor so good as the French, though it was plentiful enough; neither could he give any particulars about the modes of culture in that climate. A. amarus and davuricus were very dwarf, though not differing much in other respects from the edible A. officinalis. As, however, as many as thirty or more distinct species or varieties have been introduced at different times, it is quite possible that some of these may have intercrossed to some extent with A. officinalis, or originated types or forms better or worse than the species. For example, I have seen Asparagus plants—notably among Connover's Colossal—in England, and also at Argenteuil, that have much of the style, character, and height of the A. verticillatus of the Jardin des Plantes in Paris. Returning to the species, giant and major varieties have always been recognised. Localities have also stamped their names and characters on strains; hence we have Ely, Battersea, Colchester, Dutch, French, English, Argenteuil, and other well-known sorts. The so-called common and large varieties of the common A. officinalis have also originated families of Asparagus varying considerably in their earliness and lateness, the large kind being considered the parent of the later sorts. There is also an intermediate sort grown about Argenteuil. The differences between the so-called varieties are, in fact, more pronounced and decided in France than in England. Hence such sorts as Hative d'Argenteuil, Hative Rose d'Ulm, Intermediate d'Argenteuil, and Tardive d'Argenteuil may almost be distinguished at sight, while the more choice strains are named after their raisers or growers, as A. Hative Louis Lherault, A. Hâtive M. G. Lebeuf, &c. And yet, with all this careful selection, plants here and there in the best beds revert to common and inferior types, or refuse to come up to the high standard of others. The chief point with the best growers is to save seeds only from the strongest and most vertical-growing plants. These produce fewer shoots, and, consequently, other conditions being equal, the strongest numbers are thus freely sacrificed to size, the results averaging about 4 in. in circumference about 6 in. from the crowns of the shoots. Such facts are more eloquent than words as to the complete success of the French in growing Asparagus, and no doubt a very large share of that success arises from the extreme care in the selection of seeds, the weeding out of inferior plants as soon as they can be detected, and a constant watchfulness, that the fittest, that is, the strongest, alone should survive.

A great amount of labour and skill is also devoted to the preparation and cultivation of the soil. The cultivators make light of its original character. As a forcible means of showing this one of them assured me that he could grow good Asparagus on the public road if required. Neither do they attribute the importance to depth nor richness that we do in England. There seemed no excess of manure in it, and from 18 in. to 20 in. seemed about the average depth of the tilth. Their great point is its friability and fineness. A year's crop is often sacrificed previous to the planting of the Asparagus, so as to work or force the earth into sweetness, mellowness, and fineness; in other cases only such crops as salading or very short-topped Potatoes are taken. Even then the earth devoted to the Asparagus is ridged or mounded up from 4 in. to 12 in. high, so as to have the fullest possible benefit of sun and air. The earth, in fact, is as fine as an ash-heap, to use a hackneyed expression familiar to cultivators. Starting with such finely-comminuted soil, and planting at average distances of 4 ft. by 2 ft. between the plants, and the surface free from weeds, of course the ground continues well pulverised, loose, and friable. The plants having such copious space naturally grow strong. Each plant becomes a giant rather than degenerates into a colony of dwarfs, and the chief mystery regarding the size and quality of the Argenteuil Asparagus is solved. For the mode of planting or the time does not differ from that of the best English cultivators, but the subsequent treatment does. The French growers do less in the way of top-dressing than the English. Comparatively little salt, artificial, or other liquid manure, or solid dressings are given. What manure is applied is given mostly in the dead season, and that seldom more frequently than at intervals of two or even three years. In dry weather water is also given at times during the growing season. The ground is kept free from weeds, and special care is taken not to allow the tops to be broken or injured by winds or rains. Where specially fine "Grass" is desiderated the seeds are also picked, and worms, snails, grubs, and beetles are hunted for and destroyed.

In the autumn, when the Asparagus dies down, the earth is removed to within 1 in. of the crown and main roots, and a mulching of manure, if available, is applied; if not, an inch or so of soil is left instead, and this covering is found sufficient protection against frost. It also seems as if the close proximity of the crowns to the atmosphere during winter invigorated and strengthened them, while the removal of the 6 in. or 12 in. of superincumbent earth no doubt protects the plants from crown and root rot, so common in some gardens in England. Few things are more likely to further this than a mass of inert, wet earth pressing heavily on them, while, perhaps, the soil around the roots or crowns has become waterlogged or impervious to moisture. The earth removed from the plants is ridged up between the rows, and, of course, immediately begins a fresh process of enrichment and amelioration as it presents fresh and raw surfaces to all the atmospheric influences of winter. Next March or April the beds are slightly forked over and the soil from the ridges heaped up over the Asparagus to a height of from 6 in. to 9 in. This at once nourishes and strengthens the roots, and forms the best possible blanching medium for the French Asparagus. As soon as the stems push about 1 in. through this fine soil, the Asparagus is gathered rather than cut, the mounds or ridges are levelled down, the shoots wrenched off with the hand, and the soil is at once replaced. Perhaps the mode of gathering should be considered a factor in the superiority of French Asparagus. No doubt much Asparagus is sacrificed, many fine roots crippled and ruined, by the hackings and hewings of saw-like knives—veritable instruments of Asparagus torture in the dark. But many English growers either cut above ground, or are careful to see where and how they cut under it. So too much importance must not be attributed to this superior mode of taking the "Grass," which is, moreover, by no means universal in France, as the regiment of Asparagus knives in the Paris Exposition proves. In the careful selection of seeds and plants, the proper preparation and culture of the soil, the furnishing each plant with sufficient room to do justice to its strength, and the annual mounding and dismounding over the crown will possibly be found all the secrets of French success; and, possibly, we could hardly do better than imitate their practice in these respects if we would match—it seems hopeless to endeavour to excel—their Asparagus. One thing more, however, is needed to do this, and that is enthusiasm. The enthusiasm of each grower about Argenteuil is at white-heat, and their courtesy and kindness are as warm as their enthusiasm. D. T. Fish.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Carrots for Main Crops.—I greatly prefer James's Scarlet Carrot to the longer but coarser varieties so much grown, such as Altringham and Long Surrey. These frequently grow a good way out of the ground, whereby the crown gets discoloured and useless for cooking purposes; James's Scarlet, on the contrary, is usually of fair size, and good in colour and quality.—J. G.

Late-sown Endive.—This is a good time to sow the latest crop of Endive, which should be done on a border with a good slope so as to ensure drainage. If sown in drills 1 ft. apart and thinned just sufficient to keep the plants clear of each other, they will not get large, but will be more likely to withstand severe weather than large transplanted crops from early sowings. As they keep growing slowly in the winter, they prove serviceable during the earliest months of the year, when materials for mixed salads are in great request; the Green-curled and Batavian stand the winter better than the Moss-curled varieties.—J. Groom.

Curled Chervil.—This useful herb is usually in pretty constant request for culinary purposes, and for mixing with salads, &c. It is of very easy culture, and a small bed of it will supply a large household. During the greater part of the year it may be obtained from the open air by sowing a few rows across a border at intervals of a month. To meet the demand, however, in exceptionally severe weather, a few boxes of it should be sown now, and when well established out-of-doors they may be removed to pits or houses for a midwinter and early spring supply; for, in addition to other uses to which it may be put, it is preferred to Parsley for garnishing.—J. G.

Pricking out Cauliflowers.—As soon as the young plants are large enough to handle they should be pricked out in cold pits or frames about 3 in. apart each way in good soil. They should be kept as fully exposed as possible during genial weather, but covered during severe frosts, for although hardy enough to stand several degrees, checks to the growth, either from excessive drought or cold, are the conditions most likely to induce premature hearting; therefore avoid all extremes.—J. G.

IMPROVEMENT IN COVENT GARDEN.

It may be presumed, without much presumption, that when Englishmen are half through the Positive Age—an age that must follow at no distant period the present age of revival and sham—they will tell funny stories of the way in which house-building was generally conducted during the latter years of Victoria; of the many important functionaries that had a finger or a hand in the design of the said house; of the preliminaries that were necessary, and often conducted with a solemnity of mystery, if not secrecy, for the acquisition of the borrowed land which was to bear the said house. Take, for instance, the Covent Garden that, since the old wooden house of the Bedfords, facing the Strand, was pulled down to make way eventually for Southampton Street, has seen such striking changes. Once the abode of wealth and fashion, then of third-rate vice, then the resort of travellers, and a great hotel centre, now a market more famous than any other in England, and impassable to all carriages, except those that pay toll to the noble landowner, a market that has trebled and quadrupled in the course of this century—that has doubled within a lifetime. Well, of course, Covent Garden is to be inclosed with bran-new houses. The time has at length arrived for rebuilding the square. The first thing, therefore, to do was to make it half as big again, to allow not only space for the transaction of that business which brings an enormous income to the Duke of Bedford, but to make the thoroughfares round the market buildings eligible for public use. In any other country but England, and in far less important cities than London, a municipality would have taken care to see that such a square as Covent Garden was enlarged when the time came for rebuilding the houses enclosing it. But here in England nothing of the kind interferes with the rights that grow out of possession. Every house in Covent Garden may before long be rebuilt, but not a square inch will be added to the width of the roadway, or even to that of the pavement. True, for a short time we imagined that the southern side was being enlarged, and that some 12 ft. were likely to be added to the width of the roadway parallel with the Strand and next Southampton Street, where we risk a smash every day of our lives. But such a hope is destroyed by the fact that the alignment of Henrietta Street is being maintained by a stone coping, which has just been placed in front of the new Covent Garden Hotel, the first new building yet finished in the square; while on the other side exactly the same bit of an arcade that before existed is being rebuilt, as if the famous square belonged to two landowners, one of whom employed an architect who fashioned houses *à la mode de* Turin and the Rue de Rivoli, in defiance to the other's professional adviser, who believed that a London sun was to be courted, not barricaded off. Suffice it that Covent Garden is being rebuilt, and that for the next hundred years at least the almost perpetual block of market carts across the northern thoroughfare can neither be remedied nor reduced, except by an unlikely diminution in the market trade.

The houses, some recently erected, and others in course of erection, upon this part of the Duke's land, constitute a vast improvement over the sort of tenement that for so many years was thought worthy of the Bedford Estate. Less than twenty years ago if a leaseholder wished to obtain a renewal, for a short period, of his lease, it was necessary for him to smother the good brickwork of his old house with the dingiest cement—of a hue even more dirty than the bricks it covered. Then came a period of brick and cement dressings, followed by a few variegated fronts of red and yellow. At present, building on the Bedford estate is, in the architectural parlance, "Henri deux," approaching "Henri quatre;" and this is how the consummation is reached. First take the bit of land and then prepare to build upon it. You, the lessee, have your own agent, an architect, and he proceeds to do his duty. He applies to the Duke's agent for an elevation of the building his client (the lessee) desires to erect. It may be a shop, a dry-goods warehouse, a school, an hotel, a public house, or a chapel. An elevation is supplied by the Duke's architect (Mr. Henry Clutton) to the lessee's architect, and then the latter begins to make his plans. The plans made and accepted by the lessee are sent to the Duke's surveyor (Mr. Cross), who in the interest of his employer has been known to keep such plans much more than three months, during which time the ground-rent has to be paid, and the surveyor reports thereon to the Duke's agent. There is a building in progress in Hart Street, Bloomsbury, the plans of which occupied the surveyor nearly half a year before permission was given to begin, and the ground-rent during that period was not by any means declined. In short, in new Covent Garden, the exterior is settled before hand; the interior is made to fit the external wall; and we are bound to say that though, in one or two cases, such a course may terminate successfully, it is not a wise or logical mode of building houses which are to stand in their places at least for a century.—"Builder."

HEATING GREENHOUSES.

A RECORD OF A SERIES OF COMPARATIVE EXPERIMENTS MADE IN 1877.

The trials which were made during the past year in my horticultural establishment with the warming apparatus of MM. Berger-Barillot of Moulins, Cerbelaud of Paris, and Vendœuvre of Asnières, an account of which was published in the "Revue Horticole," 1877, p. 291, attracted a great deal of attention from both horticulturists and amateurs; I resolved, therefore, to continue them during the present year. I consequently accepted the offer made to me by MM. Mathian, heating apparatus manufacturers of Lyons, to fit up one of my greenhouses with a boiler of their own construction, and to try it comparatively with the one which had given the best results in the preceding year. This boiler, which is shown in fig. 1, consists of a bell of cast iron, in which the fuel is burnt. This bell is surrounded by a double concentric casing of thin sheet iron, between the walls of which is the water to be heated. The fuel is thrown in at the upper part, which is fitted with a cast iron mouth, and the furnace is so constructed that the smoke and other products of combustion are obliged to pass completely round the external casing of the boiler before they escape up the chimney. A small door placed in front, and level with the grating, is used for lighting the fire or withdrawing the clinkers produced by the coal or coke, either of which may be used indifferently. The experiments, of which an account is about to be given, were performed with the latter combustible. The whole of the apparatus is constructed with great care, and is of a very solid character. The apparatus, made by MM. Berger-Barillot, of Moulins (figs. 2 and 3), which gave best results in 1876, was used in the experiments. It consists of a vertical, tubular boiler, and was described and figured in the "Revue Horticole" for 1877. The two pieces of apparatus were fixed in two greenhouses of the same size, construction, and aspect, being each 28 metres long by 3 metres wide and 2 metres in height. Each of the boilers had to heat the water contained in four rows of cast iron pipes 9 centimetres in diameter, forming, with the connections and cross pieces, a total length of 115 metres of piping, containing from 550 to 600 litres of water. As in the former experiments, the houses were both kept at a temperature of about 20° Cen. (68° Fah.), the object being to see which consumed the smaller quantity of fuel in obtaining the same result. The experiments extended over the space of sixty days, noting exactly the temperature of the interior of each house six times a day, that is to say at six and nine in the morning, at noon, at two, five, and ten p.m.; also noting, at the same time, every ten days the amount of fuel consumed. The following table shows the results:

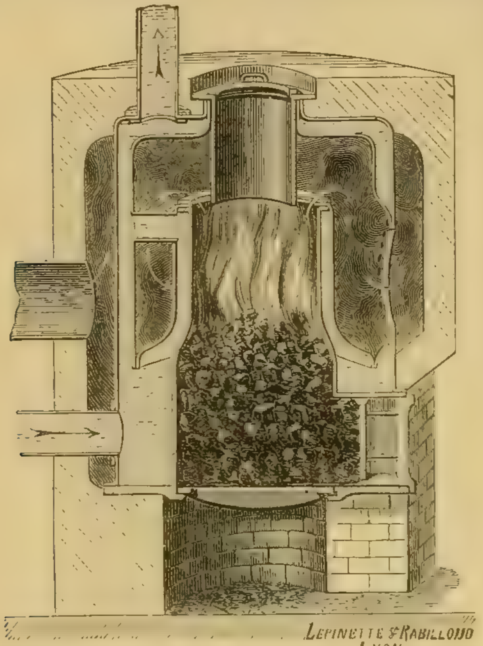


Fig. 1.—MM. Mathian's Heating Apparatus.

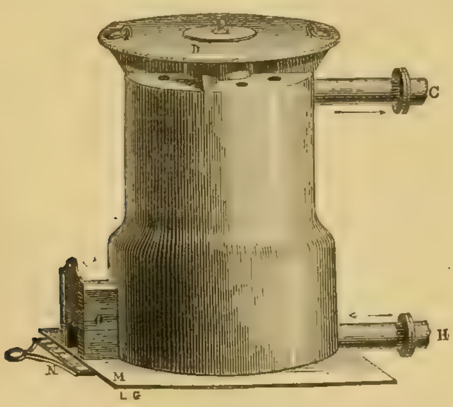


Fig. 2.—MM. Berger-Barillot's Heating Apparatus.

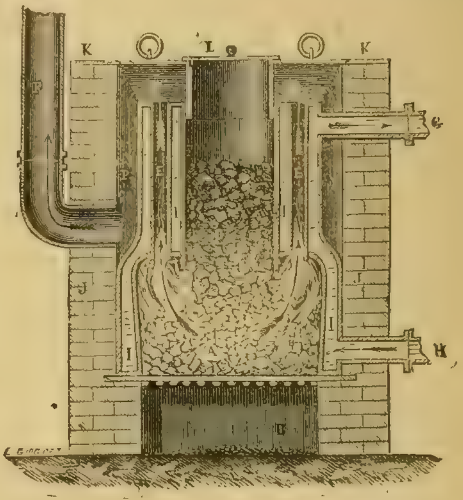


Fig. 3.—Section of MM. Barillot's Heating Apparatus.

GREENHOUSE No. 1.

Mathian's Apparatus.

	Temperature	Coke consumed
1st ten days	21°80	11 hect 50
2nd "	20°50	10 " 0
3rd "	20°33	6 " 50
4th "	19°60	9 " 25
5th "	19°95	10 " 50
6th "	21°23	10 " 25
Totals	123°41	57 —

Mean cost, calculating the coke at 2 frs. per hectolitre, 1 fr. 90 per day. Mean temperature 20°56.

GREENHOUSE No. 2.

Berger et Barillot's Apparatus.

	Temperature	Coke consumed
1st ten days	22°46	11 hect 75
2nd "	21°30	10 " 50
3rd "	21°28	6 " 50
4th "	20°28	8 " 75
5th "	20°18	10 " 25
6th "	21°75	10 " 0
Totals	127°25	57 75

Mean cost, calculating the coke at 2 frs. per hectolitre, 1 fr. 92 per day. Mean temperature 21°20

From these experiments it results that in order to obtain a nearly equal temperature, the cost of coke is nearly the same. We may therefore come to the conclusion that the heating powers of the two machines are equal for the same amount of fuel consumed; both give excellent results. MM. Berger-Barillot's apparatus is to be recommended for its extreme simplicity of construction, and the ease with which it is kept clean, the movable firegrate and cast iron plate allowing the fireplace to be cleared in an instant. On the other hand, it lacks solidity, and there is always danger of the corrosion of the brass tubes, through which the products of combustion pass into the chimney. In case, too, of repairs being necessary, they would require special tools, which are not always in the possession of gardeners. MM. Mathian's apparatus is superior to the other in solidity, and on account of its concentric envelope, may be easily repaired. On the other hand, the interior is very complicated and requires constant attention, but if the grate were movable, instead of being fixed as it is at present, the fireplace might be more readily cleaned.

A. Truffaut, in "Revue Horticole."

[Both of these boilers are identical in principle with many in use in England. Recently we have removed some bell boilers that have been in use for many years. In these cases, however, the bell had been cast hollow, thus providing a water-way between the outside and inside of the boiler. Made thus, the objections urged against Mathians' apparatus in the last sentence of M. Truffaut's remarks would be obviated. In setting the old English bell boilers, to which the fire is placed under (as shown in fig. 1), it is likewise carried all round the outside of the boilers, so that the water-way is placed between two fires, and the water can by no possibility rest for a single moment. These boilers are at once among the most simple, durable, and efficient, there being positively no complicated parts in the old English bell boiler to get out of repair. The attempt to fit sheet iron to cast, as suggested in MM. Mathian's patent, while it may render the water more easily heated, introduces an element of great weakness into the boiler. MM. Berger-Barillot's heating apparatus is also a form of boiler familiar to the older English horticulturists. It differs little from many of the earlier tubular boilers, and is still one of the most useful for the heating of small houses especially. The same form may be had in cast iron, wrought iron, or brass, so that the objection here brought against the latter metal may be obviated by using iron instead. The furnaces of both boilers may be arranged with equal simplicity. Of course, it is, however, generally more difficult to get ready access to the fire in vertical tubular boilers than in bell, saddle, or other forms. The equality of heating power in these two boilers under similar conditions, in regard to size of boiler, consumption of fuel, and area to be heated, might also have been anticipated. So long as the heat has free access to the water, the direction of the flame or the form of the water line is of comparatively little moment. These experiments, however, are interesting and most useful, especially to those—always a numerous class at this season of the year—who are meditating the warming of one or more houses, and are anxious to count the cost as well as to know the best boiler to employ.—D. T. F.]

ANSWERS TO CORRESPONDENTS.

Apple-tree Boring Caterpillars.—I send herewith a caterpillar and a piece of Apple tree in which I found it. What is its name?—C. B. [The yellow caterpillar sent with raised black spots interspersed over the body is that of the wood leopard moth (Zeuzera Æsculi). Besides boring into the wood of the Apple tree this caterpillar has been found injuring other trees, such as the Elm, Horse Chestnut, and Pear. It not unfrequently occurs in the London district, and has been found in other parts of the kingdom.—W. W. S.]

Striking Rose Cuttings.—If your subscriber (p. 275) has failed to strike Rose cuttings outside, I would recommend him to take them off with a heel and put them in pots, plunging the pots in a cool frame and taking care to preserve an equable state of moisture in the soil throughout the winter and early spring.—A. W. P.

Substitutes for the Potato (p. 275).—I have no faith in the discovery of any real substitute for the Potato, but much remains to be done in improving its culture and introducing better disease-resisting varieties. Much more also might, and ought to be done in the cultivation of other vegetables to partially take its place, or to be supplementary to the Potato I have lately had a week's run through many counties and have kept an eye on the allotments and cottage gardens as I passed, and I have been horrified to see the wretched condition in which too many of them are. Potatoes still in the ground under a mass of weeds that might be mown with the scythe, is far too common an occurrence, and the attention given to other kinds of vegetables is of the most fragmentary kind. The best advice I can give is, plant more early and second early Potatoes. Lift them early and plant Brussels Sprouts, Coleworts, Broccoli, Cauliflowers, Spinach, and Turnips. Parsnips, Carrots, and Jerusalem Artichokes might also be more largely grown; Haricot Beans might be tried; and, above all, the land should be well cultivated and weeds kept down.—E. Hobday.

Names of Plants.—*G. R.*—Certainly Sassafras officinale; it is remarkable for the diversity in form and size exhibited by the leaves. *D.*—Polypodium irregulare. *Q.*—Lamium maculatum aureum. *J. D. M.*—1, doubtless Isolepis gracilis; 2 and 3 not Isolepis setaceus, but a nearly allied species, Isolepis Savii, which is larger, paler, and has widely different fruit. The genus Isolepis is considered by most botanists merely as a section of Scirpus. *W. H. M.*—It seems to agree with Sophora (Edwardsia) microphylla, which is a native of New Zealand. It is, however, impossible to name with certainty any exotic Leguminous plant from leaves alone; generally both flowers and fruit are absolutely necessary. *E. D.*—2, Dicksonia antarctica; 3, Aspidium capense. *F. H.*—1, Aster pyrenæus; 2, Helenium varium; 3, Helenium autumnale; 4, Helianthus occidentalis; Gypsophila paniculata is undeterminable without lower leaves. *F. T.*—Cupressus macrocarpa or Lambertiana. *X. C.*—1, Retinospora pisifera plumosa aurea; 2, Cupressus Lawsoniana; 3, Chamæcyparis sphæroidea aurea variegata; 4, Retinospora pisifera filifera; the rest hereafter. We cannot name more than four at one time.

Names of Fruits.—*C. G.*—We are unable to name your Apples from single specimens; 1 appears to be Emperor Alexander.

SOCIETIES AND EXHIBITIONS.

CRYSTAL PALACE FRUIT SHOW.

September 24 & 25.

This was considered by many to be the best fruit show that has ever taken place at the Crystal Palace. In point of numbers, perhaps, it did not excel its predecessors, but, as regards quality, a decided advance was observable on the exhibits of former years. Hardy fruit was especially good, nearly all the specimens shown being clear and sound. The long lines of Grapes and miscellaneous collections of fruits, however, attracted most attention, together with some magnificent pot Vines from Berkhamsted, and the bunches of Grapes shown for weight.

Collections of Fruit.—These were not quite so numerous as usual, especially in the case of the larger classes. Mr. Colman, gardener to Lord Somers, Eastnor Castle, had the best exhibition. It consisted of fine examples of Black Alicante Grapes, shapely in bunch and fine in colour and berry; also well-ripened Queen and Smooth Cayenne Pines, Barrington Peaches, Read's Netted Scarlet-fleshed Melon, Morello Cherries, and Williams' Bon Chrétien Pears. Mr. Sage, Ashridge, had also a good collection, in which were Coe's Golden Drop Plums, Pitmaston Orange Nectarines, Walburton Admiral Peaches, Brown Turkey Figs, and good Grapes. Mr. Goodacre, The Gardens, Elvaston Castle, furnished a collection, in which were fine examples of Marie Louise Pears, Lady Downes Grapes; also Muscat of Alexandria, Jefferson Plums, and Barrington Peaches.

Grapes.—Collections of these were numerous. The first prize for ten varieties fell to Mr. Wildsmith, gardener to Viscount Eversley, Heckfield. It consisted of Black Hamburgh, Buckland Sweetwater, Alicante, Barbarossa, Trebbiano, Gros Colman, Lady Downes, Muscat of Alexandria, and Venn's Muscat, all good in bunch and berry and finely finished. Messrs. Lane & Sons, Berkhamsted, had an excellent collection, but were disqualified on account of Bowood Muscat and Muscat of Alexandria being shown as two varieties, a fact worth bearing in mind by exhibitors of Grapes. For several years Messrs. Lane have shown the two Grapes in question without dispute, but on this occasion the collection, the best in the show, was disqualified on that account. The collection contained large and handsome bunches of Muscat of Alexandria, Alicante, Trebbiano, Gros Colman, Black Prince, and other well-known kinds. Mr. Sage, Ashridge, was awarded the first prize for a collection of five kinds. They were compact in bunch and fairly well coloured. A better collection came from Mr. Tyler, gardener to R. Gosling, Esq., Bishop Stortford, but this also contained Muscat of Alexandria and Bowood Muscat, and was in consequence disqualified. Muscat of Alexandria was well shown. The best three bunches came from Messrs. Lane, who had wonderfully fine bunches, symmetrical in shape, large in the berry, and beautifully ripened. Three fine bunches, to which an extra prize was awarded, were also shown by Mr. Jarman, Westwood Lodge, Isle of Thanet. Madresfield Court was, in a few cases, shown as well, and even better, than we ever remember to have seen it before, but, as a rule, the majority of the bunches were badly coloured. The best three bunches of Buckland Sweetwater came from Mr. Bungay, gardener to W. Smith, Esq., Hill House, Herne Hill. Mr. Coleman had three splendid bunches of Lady Downes. Three fine bunches of Alnwick Seedling were shown by Mr. D. P. Bell; the berries were large and finely coloured, and altogether it appears to be a Grape which will henceforward find a place on our exhibition tables. For heavy bunches of Grapes the first prize on this occasion was awarded to Mr. Kirk, gardener to Mrs. MacKie, Castle Douglas, Kirkcudbrightshire. It was an enormous cluster, weighing 16 lb., the kind being apparently White Nice. Mr. Gosling, Bishop's Stortford, showed a bunch of Barbarossa, which weighed 9 lb. 2 oz., and the best bunch of Black Hamburgh weighed 7 lb. 2 oz. The best three bunches of Grapes, consisting of any black kind except Hamburghs, came from Messrs. Lane, and consisted of Alicante—large, well-shaped bunches, fine in colour and large in berry. Messrs. Lane also showed some well-fruited pot Vines, some of the bunches being almost equal to those on first prize stands.

Pines.—Of these only fifteen fruits were shown, all of which were of fair size and quality. The best Queen came from Mr. Sage, and the best Smooth Cayenne from Mr. Ross, gardener to C. Eyre, Esq., Welford Park, Newbury. Mr. Miles, Wycombe Abbey, had a very fine fruit of Baroness Rothschild, and a good Smooth Cayenne was shown by Mr. Pragnell, Sherborne, Dorset.

Peaches and Nectarines.—These were not so numerous as in former years. The Peach to which the first prize was awarded was Lord Palmerston, a variety which was shown in unusually good condition; Princess of Wales, Walburton Admiral, and Lady Palmerston were also very fine. As regards quality, Peaches perhaps were never shown better than on the present occasion. Nectarines, on the contrary, were poor, being either unripe or shrivelled; the best kind was the Pine-apple.

Melons were shown in good numbers, the smaller or medium-sized fruits being the best. Heckfield Hybrid and Dickson's Exquisite were the best green-fleshed kinds, and a seedling from Mr. Atkins, Wantage, and Read's Scarlet-flesh the best scarlet-fleshed.

Plums, both black and light-coloured, were numerous and excellent in quality. The best three dishes came from Mr. Sage, and consisted of Jefferson, White Magnum Bonum, and Coe's Golden Drop. Cox's Emperor, a fine dark Plum, was shown, as were also MacLaughlin's Late Gage, and Guthrie's Late Green, the latter taking the place of Green Gages, which are over.

Apples and Pears.—Of these Mr. William Paul, Waltham Cross, sent a fine collection, consisting of upwards of 200 dishes. Messrs. Paul & Son, Cheshunt, also sent a smaller but excellent collection, as did also Messrs. Rivers, Sawbridgeworth. The best three dishes of dessert Apples came from Mr. Bowles, gardener to W. Skinner, Esq., Beresford House, Maidstone, and consisted of fine scarlet fruits of Duchess of Gloucester, well-coloured, clean fruits of Ribston Pippin, and Cox's Orange Pippin. The next collection in point of merit came from Mr. Goldsmith, gardener to H. T. Lambert, Esq., Sandhills, Bletchingly, and consisted of finely-coloured, even examples of King of the Pippins, Ribston Pippin, and a handsome-looking dessert Apple, the name of which was unknown. Mr. Haycock, gardener to R. Leigh, Esq., Barham Court, Maidstone, had well-coloured, even-sized fruits of Reine des Reinette, Ribston, and Mother Apple. Among other collections, the best looking was King of the Pippins, an Apple shown on this occasion more extensively than any other kind, and, in some cases, in better condition than we have ever before seen it. Duchess of Oldenburgh, one of the best striped dessert Apples, was also worthy of notice, as was likewise scarlet Pearmain and Lord Lennox. Kitchen Apples were very large, and none of them appeared to be affected with maggot, which was the case last year. The best examples in this class came from Mr. Bowler, and consisted of the largest fruit of Winter Hawthornden perhaps ever shown, Warner's King, and Stone's Seedling. Mr. J. Pluck, New Street, Jersey, had the next best collection, in which were noble fruits of Alfriston, Reinette d'Angleterre, and Grosse Menagere; the same exhibitor had also marvellous fruits of Pott's Seedling and Mère de Ménage. Several extra prizes were awarded in this class, owing to the excellence of the exhibits. Amongst the best looking kinds in the whole collections were Lane's Prince Albert, Emperor Alexander, Blenheim Orange, Lord Suffield, Kentish Filbasket, and Cox's Pomona. The best dish of dessert Pears came from Barham Court; they were large, even, and of fine form; the kinds shown were Louise Bonne of Jersey, Fondante de Cuerne, and Doyenné Boussock. The second prize exhibition consisted of ripe and finely-coloured fruits of Louise Bonne of Jersey, Williams' Bon Chrétien, and Gansel's Bergamot. Other kinds most noticeable for good quality were Beurré Superfin, Bon Louise, Duchesse de Angoulême, and Marie Louise. Kitchen Pears were shown fairly well, the best examples coming from Jersey. The sorts to which the first prize was awarded were Belle Angevine, Catillac, and Grosse Callebasse. Of Uvedale's St. Germain, King Edward, and Sarrazin very fine fruit were also shown.

Mr. Muir, gardener to C. R. M. Talbot, Esq., Margam Park, Taibach, South Wales, sent an interesting collection of fruit of the Orange tribe, consisting of thirteen varieties; and Mr. Miles, Wycombe Abbey Gardens, showed very fine Morello Cherries. Mr. Wilson, gardener to Earl Fortescue, exhibited a triple Pine-apple, each fruit weighing from 2 lb. to 3 lb.; and Mr. Thomson exhibited male and female cones of Encephalartos villosus, the former being nearly 2 ft. in length and the latter 9 in., which had been grown in the Crystal Palace.

Vegetables.—These were not so numerous as we have seen them on former occasions, but they were excellent in quality. The best collection came from Mr. W. G. Pragnell, Sherborne Castle, Dorset. It contained sixteen varieties, all of which were in every way excellent. They consisted of Ne Plus Ultra Peas, Schoolmaster Potatoes, clean and handsome Snowball Turnips, Jackson's Mammoth Tomatoes, Veitch's Autumn Giant Cauliflower (large, firm, and white), Carcuton Leeks, and four handsome and even fruits of Tender and True Cucumber. In other collections we noted very handsome and well-ripened bulbs of Sutton's Improved Reading Onions, and very fine examples of Criterion and Carter's Green Gage Tomatoes. Mr. Goodacre, gardener to the Earl of Harrington, had very fine Dwarf Mammoth Cauliflowers and well-blanched Cardoons. Celery throughout was generally of unusually good quality, and some very good Brussels Sprouts were shown in several collections.

Cut Flowers.—Messrs. Wm. Paul & Sons showed some beautiful Roses for this time of the year. They consisted of both Teas and Hybrid Perpetuals, among which were especially noteworthy large stands of Sofrano, Celine Forestier, Souvenir de la Malmaison, and beautiful blooms of the white Niphetos. Duchess of Bedford and Charles Darwin, two excellent new Roses, were also shown in fairly good condition, and Captain Christy and La France were likewise represented by good blooms. Messrs. Rawlings Bros., Romford, sent several stands of Dahlias, which attracted much attention. Among the most noticeable kinds were Clara, a beautiful lively pink; Baroness Burdett Coutts, white edged with violet; John Bennett, golden-yellow edged with fiery scarlet, very showy; Perfection of Primroses, delicate primrose and fine in form; and J. E. Quennell, golden-yellow. Mr. Harris, Orpington, sent a dozen blooms of a fine yellow Dahlia named President, which promises to be a good kind for exhibition purposes. Mr. Morgan, gardener to Major Scott, Wray Park, Reigate, was awarded an extra prize for cut blooms of Quilled and German Asters, as was also Mr. Robert Brown, gardener to F. J. Brown, Esq., Windsor. Messrs. Laing & Co., Forest Hill, sent cut blooms of Begonias, which attracted much attention on account of their large size and diversity of colour.

THE INTERNATIONAL POTATO SHOW.

This was held this year in conjunction with the Crystal Palace Company's fruit show, the two combined making one of the most interesting shows of the year. The samples shown, notwithstanding the fact that this has been a bad Potato year, were much superior to those shown on any former occasion, and the competition was very keen in most classes. Mr. McKinlay, Woodbine Cottage, Beckenham, carried off the prize for twenty-four varieties, offered by the Crystal Palace Company, with probably one of the finest collections ever brought together; it consisted of medium-sized tubers, handsome in shape, and excellent in quality. The following are the varieties: Grampian, Snowflake, Trophy, Schoolmaster, Lady Webster, Porter's Excelsior, Blanchard, Woodstock Kidney, Ashtop Fluke, Shelburne, Beauty of Hebron, Early King, Late Rose, Rector of Woodstock, Beckenham Beauty, International, Red Emperor, New Cambridge Kidney, Extra Early Vermont, Onwards, Edgcott Seedling, King of Potatoes, Superior, and Breadfruit. In competition for Messrs. Sutton's Prizes offered for eighteen varieties of Potatoes there were twenty-four competitors. Mr. Creswell was first with Sutton's Magnum Bonum, one of the best new Potatoes in cultivation and an enormous cropper; International Kidney, fine in form and quality; Covent Garden Perfection, Brawnell's Superior (Red Kidney), Snowflake, and Schoolmaster, all of which were of good size and handsome in shape. In other collections in the same class, the best were International, Covent Garden Perfection, Snowflake, Myatt's Prolific, Royal Ashleaf, Ashtop Fluke, Waterloo Kidney, Magnum Bonum, and Wonderful (Red). Edgecott Seedling and International were perhaps the handsomest Kidneys in the show. Lady Paget, Fenn's Bountiful (Red), Webb's Imperial, and Red Garibaldi are also fine exhibition kinds. Among Rounds, the best were Radstock Beauty, Model, Bedfont Prolific, Schoolmaster, Porter's Excelsior, White Emperor, Red Emperor, and Lye's Favourite. The best twelve dishes of English-raised Potatoes came from Mr. W. Finlay, and consisted of Lapstone Kidney, Royal Ashleaf, Salmon Kidney, Princess of Wales, Schoolmaster, Red Fluke, and Rector of Woodstock. Other collections in the same class contained fine examples of McKinlay's Pride, Waterloo Kidney, Early Rose, Fenn's Perfection Kidney, Porter's Seedling, and Berkshire Kidney. Messrs. Lott & Hart, Whitehill, Faversham, had the best nine dishes of American Potatoes, including Superior Red, Snowflake, and Bresee's Prolific. Mr. J. Pink showed, in the same class, Snowflake, American Breadfruit, and Early Oneida. The best six dishes of Potatoes came from Mr. Finlay, Banbury, Oxon, who had small but white and smooth samples of Edgecote Kidney, a seedling, very handsome in shape; also Schoolmaster, one of the best Potatoes grown; Porter's Excelsior, and Lye's Favourite, a yellow-skinned kind tinted with pink. Mr. J. Miller, Hamstead Park, Newbury, showed Rector of Woodstock, Porter's Excelsior, and Magnum Bonum in fine condition. In the class of four varieties of Potatoes Mr. W. Finlay had excellent examples of Lapstone Kidney, Sutton's Magnum Bonum, Blanchard, and Scotch Blue; and Mr. F. Miller had Model, Yorkshire Hero, Blanchard, and Red Garibaldi in good condition. In other collections the best were Snowflake, Porter's Excelsior, International Kidney, Red Garibaldi, and Breadfruit. In competition for six dishes, new kinds not in commerce, Mr. J. Pink, Lees Court, Faversham, showed large and smooth tubers of Early King and Beauty of Hebron, the latter a salmon-coloured Kidney; and Triumph, large, with few eyes. In the same class Mr. Peter McKinlay had fine, even, medium-sized tubers of Woodstock Kidney, Shelbourne, Red Kidney Trophy, Red Round Triumph, and McKinlay's Pride, a white Kidney. Other exhibitors in the same class had American Ice Cream, a round Potato with a rough skin, but evidently of good quality; and Bedfont Prolific, round, white, and smooth. Mr. Porter sent seedlings and selected kinds, many of which were of a promising description; also selected garden Turnips, handsome in shape and in every way excellent. Mr. R. Fenn also sent several dishes of new seedling Potatoes. The best single dishes of Kidney Potatoes consisted of the old Ashleaf, Ashleaf Kidney, Lapstone, Fenn's Early White Kidney, and Yorkshire Hero. The best coloured Kidneys were Purple Ashleaf, Garibaldi, and Fenn's Bountiful. The best round coloured Potatoes were Red Emperor, Blanchard, and Main Crop; and the best round white Potatoes were Handsworth Early, Porter's Excelsior, and Schoolmaster. Extensive miscellaneous collections were shown by some of the principal trade growers. Messrs. Sutton & Sons exhibited fifty dishes of selected show varieties, including the new Woodstock Kidney, a beautifully shaped rough-skinned variety of great promise; also fine examples of Magnum Bonum, Rector of Woodstock, Yorkshire Hero, Early Oxford, and Sutton's King of Potatoes. Messrs. Carter & Co. exhibited little mounds of Improved Magnum Bonum grown at Sandringham, Snowflake, Bresee's Prolific, Schoolmaster, Carter's Excelsior, and other varieties of superior merit; and Messrs. Hooper & Co. sent twenty-two baskets, principally of American varieties.

A complete list of the prizes awarded at both the above shows will be found in our advertising columns.

No. 359.] SATURDAY, OCTOBER 5, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

DIVERSITY OF FORM AND COLOUR IN PLANTS

When we consider the wealth of plants both flowering and fine-foliaged which are adapted for general culture in our gardens we may not unreasonably expect to find a great amount of variety therein. It would appear, however, that that adherence to fashion which Alphonse Karr has so admirably satirised still so far affects the gardening world as to produce a certain amount of sameness and uniformity in our pleasure grounds. Many plants undeniably useful and highly decorative are but sparingly met with, and their merits receive but partial recognition. So long as the rage for bright, glaring colours and strong effects exists, so long will this state of affairs continue. Whilst plants are only valued for the effect which they produce in crowded masses we shall not see much alteration in our present system, and many of our best plants will remain in unmerited oblivion. I should be sorry to see our Pelargoniums, Verbenas, and Calceolarias banished from our gardens, but I should like to see them oftener than they are in contrast with other plants. Let us take, for instance, the Pentstemon. How seldom do we see a well-cared-for collection, and yet here is a plant distinct enough in growth and inflorescence to render its presence desirable in any garden. Then there is the Antirrhinum, possessing distinctive features of its own; Lobelia fulgens, too, a noble plant, but seldom seen in good condition. Annuals, again, are too sparingly employed in a general way. What can surpass Phlox Drummondi and its varieties for delicacy and brillancy of colour? The Zinnia, too, the Aster, and the Stock are not to be surpassed for effect; and yet for one bed or patch of such subjects as these one may count twenty of the so-called bedding plants. These, too, are but a few of the great numbers which deserve mention, but my object is not so much to give a list of desirable subjects as to show how very easily uniformity and sameness may be made to yield to that diversity of form and colour, which is the delight of the true plant lover. It is to be regretted that there is not a more general attempt, at least in small gardens, to stamp each one with a character and individuality wholly its own. We sometimes see a garden where the owner, disregarding the prejudices of fashion, has accumulated the plants which he loves best, and placed them in such situations as are most congenial to them. Such a garden to whoever cherishes plants for their individual worth, and who finds a charm in each and every kind, is a never ending source of pleasure. Many conceive that when they have succeeded in introducing all the colours of the rainbow into their parterres they have done pretty well all that is needful to secure a good effect. This is, however, far from being the case, as I hold that diversity of form rather than variety of colour is the main feature to be kept in view, either in planting permanently or merely for the summer season. It has probably fallen to the lot of some to have casually come across a garden which, although not more favoured in extent and situation than many others, possessed an indescribable charm; yet when this same garden was, as it were, analysed, it may have been found that the charm really consisted in the use of subjects which contrasted and yet harmonised with each other. As an instance, I will take the Pampas Grass. Where does it produce the best effect? Not isolated upon an open expanse of Grass, but where it is in proximity with rigid, close-growing trees and shrubs. Or take, again, a large Fuchsia standing in the midst of a carpet of variegated Periwinkle; here we get diversity of form combined with variety of colour. In what does the interest belonging to the Fernery, the Alpine rockwork, the rustic rootwork, reside? Simply in its not only affording a complete contrast to everything else, but in producing in itself innumerable variations. It is noticeable, too, that these effects may be easily obtained by employing plants of easy culture and of a comparatively hardy character; we have no need to ransack our stoves for this purpose. The hardy Ferns are as beautiful as exotic ones, and variation in foliage and general growth may be found amongst those plants which require but little protection and need but little care. Variety is to be obtained not only by means of the introduction of plants, trees, or shrubs possessing distinctive characteristics, but also by happy and tasteful combinations. An isolated tree, around the trunk and amongst the branches of which rambles some hardy climbing plant, and at the foot of which a tuft of some graceful Grass, a Fuchsia, or hardy Fern springs up irregularly from amidst a carpet of Ivy, will impart an air of freedom and natural grace to a place, and will tone down the formality which more or less exists in all well-kept gardens. In the case of tree and shrub planting, more might be done than is generally attempted with the view of giving variety. We have evergreens of many tints, and varying immensely in habit of growth; monotony in this direction is, therefore, inexcusable. It is really not more difficult to obtain variety in small gardens than in those of greater extent, the only difference being that suitable subjects must be chosen. There must also be a resolute determination to avoid repetition; never retain a quantity of any one plant because it is exceptionally attractive, as in the end it will, by excluding others, become uninteresting. My advice would be to select judiciously plants of each kind sparingly, and above all make a study of the various habits and tints of vegetable forms, in order to produce tasteful effects and harmonious combinations. If instead of emulating the blaze of large establishments and public gardens, amateurs would allow more scope to their individual tastes and inclinations, choosing the plants they like instead of adhering strictly to those which happen to be most in vogue, they would find more true enjoyment in their gardens than they now do, and we should have the pleasure of occasionally seeing plants at their highest stage of development which are but rarely seen or are consigned to some out-of-the-way spot where they get but little chance of developing their true character.

Byfleet. J. Cornhill.

SWEET-SCENTED STOVE PLANTS.

Quisqualis indica.

How seldom does one meet with this old-fashioned, sweet-scented, free-flowering plant! We have a fine specimen of it in a stove, in which there is also a large plant of Stephanotis floribunda. Either alone are among the sweetest of all plants; but the two together are superb, and a puzzle to most visitors. After a few sniffs, "Stephanotis? Yes; but how peculiar! What a sweet, spicy fragrance! different from any I have ever smelt before." And not one in a hundred ever saw the Quisqualis before, with its pretty green leaves and graceful, pendent bunches of rose-coloured flowers. To do the plant justice, it should be planted out in the stove and a few main branches trained along the roof just under the glass. The usual mixture of peat and loam suits it well. It may be spurred closely in during winter, something in the way of a Grape Vine, to give light to the other plants in the house. It will break away freely in the spring, and must not be pruned any more, as it flowers on the ends of the current year's wood. It does best, too, wholly untrained, allowing the spray to droop down gracefully from the glass. Numbers of shoots are often produced. The weakest should in such cases be cut clean out. Strong shoots often also break out and run great distances. One or more of these should be trained up to the roof in all cases where room can be found or made for them. These will break out into laterals, and continue flowering right up into the winter. As the first shoots will begin to flower in May or June, a long succession of bloom may thus be gathered from the same plant. The flowers are not unlike a pink Bouvardia in form and appearance. Their colour is also almost unique among flowers varying with their age and position in regard to the light from almost white to a decided rose or red. The fragrance is also unique—say Stephanotis with a dash of Vanilla in it, or rather Quisqualis, for there is no odour known to me so distinct, while nothing could be more pleasant. The plant has a drawback which may have helped to limit its cultivation. Hardly is a branch of it cut when its flowers drop off one by one, their long tubes falling from the stems. But for this failing, few flowers would be more useful for drooping over the sides of small vases and baskets than the Quisqualis indica. By cutting the bunches as the flowers begin to open, and handling them carefully, it may still be used for these purposes; but this peculiar failing of the Quisqualis only renders the blossoms more useful for other purposes. The flowers should be picked singly, and used for the furnishing of small glasses, baskets, pans, &c., or for bouquets. This prevents the large sacrifice of advancing buds incident to the cutting off branchlets of the Quisqualis, and preserves the flowers much longer sweet and fresh. Garnished with Moss or small Ferns, few flowers are more effective in small glasses than those of the Quisqualis; they also look well with Stephanotis, white Bouvardias, Jasmines, white Primroses, Cyclamens, or Snowdrops—almost the only flowers they go well with. For bouquet or wreath work blooms of Quisqualis are most effective in threes; used thus for the fringe of a bouquet, the flowers give a unique effect and fragrance, and are generally much admired by all lovers of chaste colours and choice perfumes. A spray of damp Moss twisted round the trio of blossoms preserves them fresh and sweet. The single flowers, placed in water, also last several days. Finally, the Quisqualis is an exceptionally clean plant; aphides, nor scale, nor thrips will have none of it, and, although growing side by side with the Stephanotis, a mealy bug seldom or never touches it. D. T. Fish.

DWARF NASTURTIUMS.

The exceedingly brilliant colours seen just now in these gay, but tender, garden plants resemble in one respect the leaves of the Virginian Creeper, which are never so beautiful as just before death. A sharp white frost may come at any moment, and destroy not only the beauty of the flowers, but also the life of the plant. Few annuals come into flower more quickly than these Nasturtiums; few bloom more constantly or longer. Modern styles of bedding have hardly dealt with the Nasturtium, especially the dwarf kinds. Such rich, bold colours as are found in the compactum strains—sorts that must not be confounded with the Tom Thumb kinds—are marvellously effective when seen in masses, and if the soil be somewhat poor so much the greater the mass of bloom. Bedfont Rival, a deep, brilliant orange-scarlet, has large flowers of fine form, and it is a robust grower. Beauty of Malvern is very floriferous, but the flowers are smaller and have less depth of colour. Hunteri, noticed in The Garden (p. 286), flowers exceedingly freely, but the growth is small and dwarf; this is better fitted for moist situations, whilst a robust kind, such as Bedfont Rival, does remarkably well under drier conditions. The most effective yellow, the flowers of which are profusely produced, is compactum aureum, a good companion to the scarlet kind. Lustrous is an especially rich-coloured kind, having deep crimson-scarlet flowers and leaves of a dark hue; though a little less floriferous than the other sorts, it is more brilliant and effective as a bedder because of the deep rich tints of its flowers. A very pleasing and altogether unusual colour is found in carminatum, a rich carmine-red variety of the large-flowered scarlet kind; this is very beautiful, and produces a most striking mass of colour. The forms of compactum are so constant, that they are never without flowers from first to last. In this respect these outshine the Tom Thumb kinds, which have a short season of flower and then collapse. They can be had good from seed, and generally true, but it must be understood that actual truthfulness as regards varieties can only be ensured by means of propagation by cuttings. Fortunately, cuttings are furnished by the plants in great abundance, and these will strike freely anywhere under glass if put in about the middle of September. A few dozens put into store pots will yield a large number of cuttings in spring, and these spring-struck plants make the best for summer bedding. Plants from cuttings also make less leafage, furnish more bloom, and, curiously enough, produce little seed, but what is so produced may be relied upon to fairly reproduce the parents if no other kinds of Nasturtium are growing near. In growing these for seed it is the practice to weed out everything from the stock that is not true. With such care, the truthfulness of the seed produce may be fairly maintained. As the plants cover the ground rapidly, it is found advisable to rake the surface of the soil smooth and fine, so that when the seed is dropped, as it doubtless will be largely during the summer, it can be gathered up by hand without much difficulty. The plants are uprooted early in October, the seed shed is cleared up, and the plants are placed in it. These live for some time, and soon perfect the seed which is still upon them. The late seed takes some time to fully mature, and it is needful to keep it spread out thinly on cloths under glass for several weeks before it is fit for storing. The Tom Thumb kinds are sown in large breadths in the open ground in spring, but the compactum race grow too freely when so raised, and are best produced under glass and then planted out. Treated thus, they bloom earlier, are more compact, and can be planted out to succeed spring bedding plants. All who love rich masses of colour will find these dwarf Nasturtiums or Tropæolums worth cultivation. A. D.

Fine Willow Trees.—I have lately seen some astonishingly large and picturesque Willows in Germany, and should say the nobler Willows deserve more attention at the hands of planters, even from the point of view of their appearance when well grown and old. Perhaps Mr. Berry, or Mr. Syme, or some of the correspondents of The Garden will tell us what kinds (among the very large number of Willows known and described) are most remarkable for their size and picturesque effects. Of course such questions as size, colour at various seasons, and habit are quite beneath the notice of a large number of botanists, and cannot be found alluded to in their works. These, for the present, must be left to what the "Journal of Botany," advancing half a step across the imaginary boundary which Herbert Spencer and the philosophers tell us does not exist, terms "semi-scientific" people.—J. H.

The Wild Honeysuckle.—I never remember to have seen this Honeysuckle flower in such profusion as it has done this season. The hedges in most places in this neighbourhood have been crowded with its beautiful flowers, the heads of which have been unusually large in size; this I attribute to the moist season. Its beauty, however, is shown off to the best advantage when it climbs high up amongst the Oak, Hazel, and other trees, forming here and there masses of bloom which contrast in the most charming manner with the dark coloured foliage which surrounds them. Nothing can be more pleasing than this combination of flower and verdure, and it seems to illustrate in the most perfect manner how many of our climbing plants might be utilised.—J. Cornhill, *Byfleet.*

Distribution of Bedding Plants.—Mr. Lindsay Wood, of South Hill, near Chester-le-Street, has requested his gardener to distribute the whole of his bedding plants among such of the working classes in the neighbourhood as like to apply at South Hill for them. Many, it is hoped, will embrace the opportunity of securing such plants as they require, and it will be hard indeed if, out of half-a-dozen Pelargoniums and Calceolarias, the average intelligent cottager cannot save at least one half.—Tynedale.

—— We are requested to announce that the Commissioners of Her Majesty's Works and Public Buildings intend to distribute this autumn among the working classes and the poor inhabitants of London the surplus bedding-out plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew, and Pleasure Gardens, Hampton Court. If the clergy, school committees, and others interested will make application to the superintendent of the park nearest to their respective parishes, or to the director of the Royal Gardens, Kew, or the superintendent of Hampton Court Gardens, in the case of persons residing in those neighbourhoods, they will receive early intimation of the number of plants that can be allotted to each applicant and of the time and manner of their distribution.

Carters' Improved Magnum Bonum Potato.—Last spring I purchased from Messrs. Carter & Co. 14 lb. of this Potato., The produce of the seed has in the last few weeks been taken up and carefully weighed, and the result was 332 lb. of good fit-for-table Potatoes, almost entirely free from disease, and when I say almost entirely free from disease, I mean that ninety-nine in every hundred would make a good show in a vegetable dish, and this in a wet season and in damp Lincolnshire.—Thomas White, *Scamblesby Vicarage, Horncastle.*

NOTES OF THE WEEK.

Helianthus orgyalis in Flower.—This plant, so often recommended for its foliage, is beautiful when in flower, the blooms being numerous and without that coarseness which is characteristic of a good many of the Compositæ. In fact, I like them well enough to cut them for large vases, cutting off for this purpose about 1½ ft. of the shoot. The effect of large plants is now (September 29) very fine.—J. H.

Catalpa Fruit.—Among the specialities of this season may be mentioned the fruiting of the Catalpa. I have never before seen the fruit in England, but my tree is now covered with it. The pods are not so fine as I have seen them in France, being only about 6 in. in length, but some may yet get longer. In France I have seen them over 1 ft. in length.—Henry N. Ellacombe, *Bitton Vicarage, near Bristol.*

Corydalis lutea.—I have still some very large tufts of this old and graceful plant that are to-day (Sept. 27) as full of flower as they are often seen in midsummer. It seems to me a plant of the highest merit and one partially neglected, perhaps owing to its easy culture and its being common in some localities. On ruins, on walls, even on high and dry walls in perfect repair, on the rough and dry rock garden, or on borders dry or moist, it seems equally at home and equally useful.—J. H.

Gigantic Rhododendron.—A specimen of Rhododendron ponticum growing in the beautiful grounds of Earl Annesley, at Castlewellan, Co. Down, measures 252 ft. in circumference and 23 ft. high. It is in vigorous health, and is by far the largest Rhododendron I have seen. Is any one acquainted with a larger?—T. Smith.

The White Lapageria.—We have received from Mr. Culley, gardener to Edward Salt, Esq., Ferniehurst, Shipley, near Leeds, a cluster of this Lapageria consisting of eleven open flowers and one bud. The blooms are individually very large in size, of great substance, and of a pure waxy white. On the red kind in the same establishment there are also just now several hundred blooms open.

New White Clove Carnation.—I noticed a paragraph in The Garden the other day (p. 234) referring to my white Clove Carnation Susan Askey. It comes into bloom early in July, and continues to produce blossoms until frosty weather sets in, each flower being large in size, pure white, and delicately fragrant.—William Culverwell, *Thorpe Perrow.*

Pontederia crassipes.—This is unusually luxuriant in the Victoria tank in the Royal Botanic Gardens, Regent's Park. The stalk of one of the leaves which we measured was 30 in. in length, and the leaf itself measured 11 in. one way and 11½ in. the other. This Pontederia is one of the most interesting of water plants for growing in ordinary sitting rooms. A woodcut illustration of it will be found in The Garden, Vol. VI., p. 171.

Bananas in Covent Garden.—These are just now very plentiful, and the clusters are larger than we ever remember to have previously seen them. The pips, too, are individually very large and plump, and as many as 120 may be counted in a cluster. They are suspended in the shops, where, with a little warmth and plenty of air, they ripen perfectly.

Choice Orchids in Bloom at Chelsea.—The Orchid houses in Messrs. Veitch's nursery are just beginning to be attractive. In addition to many of the well-known kinds of Lady's-slippers, Phalænopsids, and Odontoglossums, there are also now in flower several Orchids of a new description. Among these we may mention Dendrobium Guibberti, a kind in the way of D. densiflorum, but shorter in habit of growth, and having larger bulbs and much larger trusses of blossoms, some of them measuring upwards of 12 in. in length. The flowers, which have a golden-yellow lip and cream-coloured petals and sepals, are very showy, rendering this one of the most attractive of Dendrobiums. D. bigibbum superbum is also finely in bloom, and, contrasted with the type, the superiority in size and colour of its flowers can at once be seen. A new Cattleya, the result of a cross between C. labiata and C. Loddigesi, raised ten years ago, and now flowering for the first time, is a good addition to hybrid Cattleyas; the petals are of a rich violet colour, and the lip is broadly tipped with purple. A very fine variety of Miltonia Moreliana is also in flower, as are likewise good specimens of the sweet-scented Pilumna fragrans. Plants of Oncidium Forbesi, growing on blocks of wood suspended from the roof, are very attractive, bearing, as they do, numerous graceful spikes of rich chocolate-gold-edged blossoms. Phalænopsis rosea may here be found in better condition than one usually sees it, and recently-imported varieties of P. grandiflora show a great improvement as regards the size of their flowers on those hitherto in cultivation. Odontoglossum crispum and O. vexillarium are furnished with strong spikes of flowers, which will soon be open. In addition to those already named, there are finely in bloom Dendrobium giganteum, Indian Crocuses (Pleiones), Odontoglossum Andersonianum, Cœlogyne Cummingi, Masdevallia Veitchi, and a host of other well-known Orchids.

The Pampas Grass at Torquay.—There is a plant of Pampas Grass here which is truly worthy of a passing notice. It is furnished with from fifty to sixty flowering spikes, rising to a height of 10½ ft. The foliage or Grass is very abundant and about 9 ft. high, and its girth, on the green sward beneath, is some 30 ft. It is growing on a Grassy slope facing S.S.W.—An Old Sailor.

Alnwick Seedling Grape.—Really good new fruits are comparatively scarce, and especially so in the case of Grapes. This new variety, however, which has been awarded a first-class certificate at South Kensington and at the Crystal Palace, is likely to prove more valuable than many of the new kinds which have been sent out during the last few years. It is a noble-looking Grape, and on this account, as well as on account of its good flavour, it is likely to prove a valuable kind for market purposes.

Torenia Bailloni.—This pretty greenhouse annual, introduced by Messrs. Veitch & Sons, of Chelsea, may now be seen in flower in quantity in their nursery. Its blossoms at present are not produced in such numbers at one time as are those of T. Fournieri, but they open more successionally. It is a good plant and associates well with the blue-flowered T. Fournieri and asiatica.

Daphne rupestris.—For some weeks past this charming diminutive Alpine shrub has been and is still beautifully in flower on the rockwork in the York Nurseries. The flowers are large, bright, rosy-pink in colour, and agreeably fragrant. It usually expands its blossoms in the spring, so that those now open are out of season, but none the less welcome. The plant is only of slow growth, taking some years to form a moderate-sized tuft, but then it is a gem well worth waiting for. It seems to thrive in very stony and peaty earth with abundance of white sand, and should be planted in a well-drained position, but not a dry one.—R. P.

New Crossbred Race of Nerines.—Messrs. E. G. Henderson have been trying some experiments with the view of improving the varieties of this useful bulbous plant. The aim, so far, has been to produce kinds which are not naked flowered, but which have leaves as well as flowers. This has been secured by crossing an evergreen variety, the flowers of which are almost useless, with N. coruscans major. The seedlings resulting from this cross now in flower are well supplied with foliage, whilst the flowers are good, well varied in colour, and distinct from those of any other kinds of Nerine. By further attention to hybridisation there can be no doubt that some important kinds will be forthcoming. Being easily grown and very attractive when in bloom, attention may be paid to their improvement with advantage.

Vallota purpurea in Covent Garden.—The flowers of this useful plant are now amongst the showiest and most prized in Covent Garden for use in large bouquets and other floral devices. They last for a considerable time in water, and if the whole spike be cut the unexpanded blooms open perfectly afterwards. In this market may also be observed Vallotas in the shape of small plants in 5-in. and 6-in. pots, each furnished with a strong flower spike surmounted by from six to seven brilliant blossoms and buds. Though generally in flower in autumn, the Vallota, by careful judgment, may be induced to bloom in succession far into the winter. This can be effected by growing the plants on liberally after flowering instead of allowing them to take care of themselves and go to rest shortly afterwards, as is usually done.

Tree Carnations at St. John's Wood.—There is just now a fine display of perpetual-flowering Carnations in the Pine-apple Nursery. The plants, which consist of some 4000, are the produce of cuttings put in last March in pots placed in a warm house near the glass. When well rooted they were potted on and gradually hardened off, and in August they were potted in 5-in. pots in good, friable, yellow loam. The plants are furnished with strong shoots, which bear from five to eight large buds and blossoms. At this season of the year few flowers are more useful or more highly prized, either in a cut state or on the plants, than are those of these Carnations, and considering how very easily they can be grown, and in what a short time good flowering plants may be produced, even in the smallest gardens, there is no reason why abundance of Carnations in full bloom could not be had for the window or the small conservatory during the greater part of the winter months.

Ceanothus azureus.—One of the most conspicuous plants now in flower on walls is this lovely Ceanothus, the spikes of azure blue blossoms on which are produced in great abundance.—J. G.

NOTES FROM KEW.

Hardy Herbaceous Plants.—With the exception of many Asters and other Composites, the best of which have already been noted, there are at present few hardy flowers of interest. One of the best of autumnal-flowering plants for the mixed border is Pyrethrum uliginosum—a native of Hungary—a very floriferous kind about 4 ft. high; the large flower heads, which look like an enlarged Ox-eye Daisy, last a long time in full beauty, the cold and wet not seeming to affect them to any extent. On one of the walls is a plant named Eupatoria fragrantissima; it has glossy, green leaves and large flat-topped panicles of white blossoms. Zauschneria californica, with its deep red flowers and neat habit, is also worthy of mention on account of the length of time it keeps producing its handsome blossoms. Bruckellia grandiflora, a North American plant rarely seen in cultivation, has panicles of drooping, pale, straw-coloured flower heads; it is an elegant plant growing from 18 in. to 2 ft. high. Francoa ramosa, a Chilian herb, has tall flower stems, bearing at their extremities racemes of pale, rose-tinted flowers, each of the four petals bearing a deeper rose-coloured blotch in its centre.

Greenhouse Plants.—Oxalis odorata and rigidula are charming little plants; the first has umbels of sweet-scented, mauve-coloured flowers; the other has large, rosy-red blossoms. A golden variegated form of Ophiopogon spicatus is flowering freely in the winter garden; the beautifully-variegated foliage and spikes of pleasing blue flowers afford an agreeable contrast. Another plant, a native of Japan, Polygonum filiforme variegatum, growing about 1 ft. high, is sure to be a great favourite with all who have any leaning towards plants with variegated leaves, the colouring being very constant and most effective. Anigosanthus rufus, from Australia, has Grassy leaves and a tall flower stem bearing long, curved, deep-red flowers; it is very distinct and peculiar in appearance, decidedly ornamental, and of the easiest culture. Begonia octopetala, from Natal, is a handsome kind, having large leaves with red stalks, and a stout scape, also red, bearing large white blossoms.

Stove Plants.—Plumieria lutea, a Peruvian member of the Dogbane family, is now in flower; it is a small branching tree with its leaves, which are more than 1 ft. long—deep glossy green on the upper surface and paler below—crowded at the ends of the branches. The very sweet-scented flowers measure about 4 in. across, and are pale pink in colour with a broad, pale golden-yellow base. Coffea travancorensis, an East Indian shrub, has a neat bushy habit, pretty dark green leaves and a profusion of pure white, deliciously-scented blossoms; as a stove shrub it is equal to many Gardenias. Episcia erythropus, a charming plant introduced a few years ago from New Grenada by Messrs. Veitch, has tufted leaves with clusters of very shortly-stalked flowers springing from their axils; the leaves are about 1 ft. long, are bright green above, pale and suffused with red beneath, the midrib, nerves, and stout leaf-stalk being blood-red; the flowers, nearly 1 in. in diameter, are pale flesh-coloured, dotted with orange-purple spots within the yellow throat. Dichorisandra thyrsiflora, a native of Brazil, has panicles of splendid dark blue blossoms; this desirable plant lasts a long time in bloom, and also succeeds well under greenhouse treatment.—†.

A FEW GOOD KINDS OF OXALIS.

The following hardy kinds of Oxalis, which are now flowering very freely, include some of the most beautiful, as well as the rarest, of this very numerous family:—

Nine-leaved Oxalis (O. enneaphylla) is a charming species inhabiting the Falkland Islands. It is one of the stemless section of the genus, with a creeping, scaly, underground stem, and a tuft of leaves from 3 in. to 4 in. long, with from nine to twenty leaflets, reversed heart-shaped, and very glaucous. The flowers are freely produced, and rise just above the leaves; they are funnel-shaped, from 1 in. to 1½ in. across, and of snowy whiteness, rendering it one of the most beautiful and attractive amongst plants that bloom at this season. It is yet very rare in gardens.

Lobed Oxalis (O. lobata).—This, which is a native of Chili, is a better-known kind, and a veritable little gem. It is also a stemless species with slender leaf stalks, and three deeply-lobed bright green leaflets, so arranged that two pairs of lobes form a horizonal square, the two others being in a more or less vertical position. The blossoms, which are produced considerably beyond the leaves, are borne singly on slender stalks, and are about ¾ in. across, and of a rich yellow colour, the centre being delicately pencilled with chocolate. It is very free flowering, and is a bright little plant during sunshine.

Smith's Oxalis (O. Smithi).—This rather rare kind grows about 6 in. high; it has slender leafstalks, and three leaflets cleft almost to the base nearly 2 in. long and very narrow. The flowers, which are borne singly, are 1 in. across and of a bright rose colour.

O. Bowieana, from the Cape, is also one of the finest in the genus; it has long leaves, and broad, deep green leaflets. The flowers are borne in an umbel-like manner, on stalks nearly 1 ft. high. They open in quick succession, are over 1 in. across, and of a deep rose colour, with a greenish-yellow centre.

There are also several others of less interest and beauty, such as the pink O. floribunda and purpurata, the fine yellow O. Valdiviana, and the white variety of O. floribunda, all of which are, however, worth attention. O. enneaphylla, and O. lobata require to be grown on well-drained portions of rockwork in company with other choice Alpines. The rest will take care of themselves if planted in a border consisting of light soil. A.

Rubus cratægifolius.—This is a distinct and vigorous species of Rubus, not scrambling, like our native kinds, but erect or arched, and quite strong enough to support itself without stakes, and grow to a height of from 6 ft. to 8 ft. The foliage is large, and turns a fine red late in autumn. It bears a great number of fruit of good flavour. It is one of Dr. Regel's introductions from the Amoor River, and, if we mistake not, was "sent out" by Messrs. Frœbel, of Zurich.

Hibiscus palustris in Flower.—We notice this remarkable hardy plant in flower in the Botanic Garden at Munich, but as yet only the first buds are opened. It is probable these hardy American Hibiscuses require a higher temperature than that of Western or Central Europe to flower well. Some of the finer kinds would be worth a trial in pots in orchard houses or winter gardens. Flowering late they might prove useful.—G.

Macleaya cordata Well Grown.—It is quite surprising to notice the fine proportions this plant presents in good deep soil. I have a plant of which many of the leaves measure 15 in. in length; a more striking object at all times is rarely seen in the garden. It is now as fine, bearing its numerous erect panicles of seed-pods, as it was when in flower. The plant differs from a great number of herbaceous ones in the fine picturesque effect it affords, at all seasons, coming up, half-grown, in flower, or, as now in autumn, in seed. Therefore, it is most valuable for planting by itself (in a group of two or three plants) on the Grass in deep, rich, and not wet soil, where it may attain such proportions as those to which I allude.—H.

Potentilla speciosa.—This is a silvery-leaved species which promises to prove an interesting rock plant, and will also be attractive to those interested in silvery-leaved or variegated plants. It is in the collection of M. Frœbel at Zurich.

Malva crispa as a Fine-foliaged Plant.—This free-growing plant has attained fine proportions in my garden from self-sown seeds that, of course, came up by chance. They reached 9 ft. and 10 ft. in height, and are of a handsome pyramidal habit.—H.

Aruncus sylvestris.—I received our now well-known Spiræa Aruncus under this name, from a Continental nursery, and the hint may be useful. As to the question of names, it matters little so long as they represent distinct plants, but it is desirable to avoid duplicates in some cases, especially when, as in this case, we can procure them at home. The best varieties (for there are green-flowered poor ones) of this plant are extremely valuable for the mixed border, the margins of shrubberies, the wild garden, or for groups of hardy, fine-foliaged plants, for the leaves, as well as the white plumes of flowers, are handsome.—J. H.

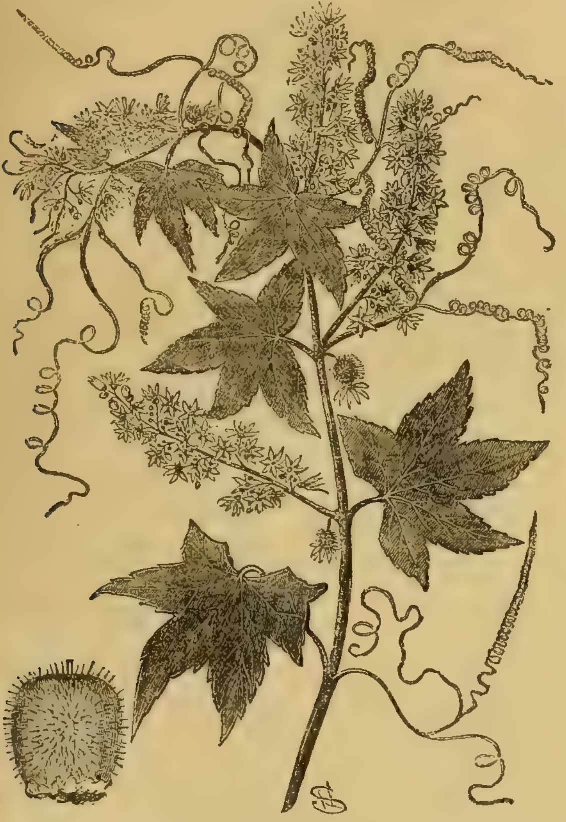
A Good Border Plant.—This may truly be said of Messrs. Veitch's Begonia Queen of the Whites now profusely in bloom in their Chelsea nursery, where it is planted at the corner of a piece of rockwork. In this position it grows well, and its flower spikes, which are still being abundantly produced, are remarkably strong, and yield a profusion of pure white, sweet-scented blossoms. Several large frames filled with plants of this Begonia are just now a sheet of blossom, a condition in which they would keep till Christmas, provided they were subjected to a dry, airy atmosphere; and where white flowers are in demand during the winter months, this Begonia, if grown under favourable conditions, will supply large quantities.—S.

Loasa volcanica.—This was discovered in 1876 at the foot of the volcano Corazon, in the Republic of Ecuador, by M. André, who named and introduced it into Europe. It flowered for the first time with M. André in May, 1877, from the seed obtained by him in 1876. The following year, the same plant was sent to M. Huber at Hyères by Mr. Wallis, and introduced by him into commerce under the name of Loasa Wallisi.—A.

THE FLOWER GARDEN.

THE WILD BALSAM APPLE OR CUCUMBER.

In "Home Topics" mention has been made of the wild Cucumber, more generally known as the wild Balsam Apple, as a desirable climber. Of late years many exotic ornamental climbers have been introduced, and while some of them may be more showy, none are more interesting than this native. Though often called the wild Cucumber, it is not much like the Cucumber; it belongs, however, to the same family, but differs in its manner of flowering and in its fruit from the Squash, Melon, Cucumber, and other common plants of the family. The botanical name is Echinocystis lobata, the generic name being from the Greek for hedgebog, and bladder, as its fruit is bladdery and prickly, and the specific name has reference to the lobes of the leaves. It is found from the western part of New England to Missouri, mostly in the Northern States. It is an annual, climbing 10 ft. or 15 ft. high, by means of its long and abundant three-forked tendrils. The nearly smooth leaves measure from 3 in. to 5 in. across, and have five sharp lobes. The flowers are of two kinds in the same plant; the sterile, or staminate flowers are in compound clusters, often 12 in. long, from the axils of the leaves; the individual flowers small and white, consisting of six narrow petals united at the base, and three united stamens. The pistillate or fertile flowers are solitary, or two or three together from the same axil. The accompanying wood-cut represents a small portion of the plant, though much reduced in size. The fruit is oval, or nearly globular, about 2 in. long, and has on its surface numerous weak prickles. When ripe, it bursts at the top, the rind breaking open irregularly, to liberate the seeds, of which there are four large, blackish ones about the size of Water Melon seeds, though thicker. They are contained in pairs in two oblong cells formed of fibres woven into a handsome net-work. Like the sponge Cucumber, the fruit of this in ripening becomes very fibrous within, and makes a fine object when skeletonised. This is a capital plant wherever a quick growing climber is needed; we know an instance in which an unsightly woodpile was converted into a bank of verdure; and last autumn we were at a charming residence near Lake Michigan where the dining-room windows were draped with this plant. It is almost constantly in flower, and its fragrance is very agreeable; the great abundance of tendrils and the curious way in which they dispose themselves, add to its gracefulness, while the fruit is ornamental when green, and exhibits an interesting structure when ripe.—"American Agriculturist."



The Wild Balsam Apple or Cucumber.

HINTS TO IMPORTERS OF LILY BULBS.

"The time to collect Lilies is after the flowering season is over, when the leaves turn yellow and fall off, and the stems die down." This is the advice which we are told is generally given to Lily collectors. Were I to advise, I would say: "Do not wait until after the flowering season is over, nor even until the plants are in full bloom, but collect them just when the earliest flower buds are beginning to open, or even somewhat earlier, so that the bulbs may arrive in England six weeks or two months earlier than we generally see them." I admit that this advice is so contrary to all established rule, that it will require the fullest explanation if it is to have the desired effect. All that we want is that the new bulbs should arrive in this country as early as possible in the fittest state for growing and thriving, if properly planted in the ground. When I say the new bulbs, it is necessary that it should be distinctly understood that I do not mean the lumps of decaying matter that are usually offered for sale as Lily bulbs, as these are in reality nothing more than the temporary envelopes of the new, but true living bulbs. During this last season I have lifted and replanted all my collection as the different kinds went out of bloom; and as I purpose now to communicate the result of my past and present experiments on the points in question, offering nothing for consideration but substantial facts, I trust I may be favoured with the best attention of those who are interested in the matter.

Beginning with my communication at page 237, Sept. 14, I would first direct attention to the fact that, on looking at the photographic representation and my explanation, we have there placed before our eyes in L. candidum, as nearly as possible, the condition of all Lily bulbs, early or late flowering, when lifted out of the ground, "after the flowering season is over," for exportation to this country. As the roots of the new bulb, it will be seen, have progressed too far (from 5 in. to 7 in.) to be lifted without sustaining injury, let us go back a few weeks and try if we can find them in a better state. If we turn to page 60, July 20, we there see that during the first fortnight in May I lifted out of the ground thirty-three specimens, small and great, one of which, No. 33, was L. candidum, taken from the same clump as that at p. 237. The roots of the new bulb were then nearly 2 in. long, and this, it is important to notice, was six weeks before the parent bulbs of the same clump began to bloom. As a practical proof that cutting down the stems and lifting the bulbs so early do not affect the growth of the new bulbs, I may here repeat that some of the bulbs which I lifted with No. 33, but which were not required for dissection, I replanted, and they are now sending up their radical leaves 6 in. and 7 in. above the ground, strong, fresh, and green. I may also here repeat, that for every day the stems are allowed to remain after flowering they are, in like proportion, robbing the new bulbs of their legitimate sap, the new bulbs, remember, not the old ones. Passing over the intermediate bloomers—for a description of them would be nearly a repetition of what I have already said—I now come to L. speciosum. On Sept. 17 I cut down all the stems to within 3 in. or 4 in. of the ground, and then, assisted by a very intelligent cultivator, who can speak as to the facts, we lifted the bulbs very carefully so as to injure the new roots as little as possible. We saw at a glance that the new roots had extended from 4 in. to 6 in. into the ground, and were, in appearance, quite in accordance with what has already been described at p. 60 in connection with L. candidum, the old roots being dead and dying. So far back as the middle of July I had also lifted some bulbs of L. speciosum, and found that the new roots were then about $\frac{1}{2}$ in. long, the roots when they first begin to protrude being white and plump, with rounded ends, not fibrous. My clumps of L. auratum continuing later in bloom, I did not lift and replant until September 25, when I found the new roots in every respect similar to those of L. speciosum. These are facts worthy of consideration, but there is another fact of no less importance. If the bulbs in their native habitats be not lifted till after the leaves turn yellow and the stems die down, the germ (or origin of the next new bulb) will have been liberated, and, in thousands of cases, will have been destroyed before they can reach this country, and, consequently, though the new bulb may bloom one year, the successional seed bud being destroyed, there will be no more successional bloom; whereas, if lifted just as they are beginning to open their flower buds, the germ cannot be liberated until after the arrival and planting of the bulbs in this country; after that there can be nothing to check them or the growth of the new roots, for, remember, if the bulbs be lifted late in the season new roots (in place of those that will inevitably die) must be formed at the expense of the sap in the cells of the new bulbs, which would otherwise have been expended in nourishing and developing the new flower stem, causing, besides, much loss of time and a later bloom, as well as the chance of not blooming at all.

In the adoption of a new system the greatest difficulty will be to overcome preconceived notions. Up to the present time, it has been generally believed, both by Lily growers and collectors, that the parts which we handle and look at outwardly are the true bulbs. This opinion is so universal that the Japanese practice is as follows: "In autumn, soon after the stalk has withered, the bulb is taken out of the ground and all the roots (old and new) are removed. It is then exposed to the air about ten or fifteen days, and then replanted sideways, in order that the water may not lodge between the scales, which might be the case if the bulb were placed upright." A worse practice could scarcely be imagined. In the first place, the exposure of the new bulb within the old one to the searching effects of the air is ruinous, as it dries up the sap in the cells which Nature has stored up there for the support and growth of the plant, and the bulb itself shrinks up considerably in less than ten days. In the second place, there is not the slightest necessity for planting the bulb sideways; quite the reverse, for we may water the scales of the old bulb as much as we please without ever touching the interior parts of the new bulb, the scales of which are so firmly packed one upon the other, that it requires some degree of art to separate them without injury. To be convinced of this we have only to look at the illustration on p. 237, where there is not a single loose scale to be seen, except those belonging to the old bulb. But even Dr. Kellogg, of Californian celebrity, appears to have recognised some advantage in the preservation of the gaping scales of the old bulb, for he says, in his cautions to Lily growers: "May not the cultivator, in his undue solicitude, be to blame, and by some shortcoming fail, or from excess, undo by overdoing? Suppose he flood too continuously between loose scales, &c." From this it appears that the old bulb was the only bulb that Dr. Kellogg acknowledged; and from this it is clear that he had never looked deeper into the matter. Yet he says, "Consider the Lilies, how they grow." This is what I have been endeavouring, for many months past, to induce some of your readers to do; but it cannot be done by merely looking at the scales, or outside, of the old bulb. We must go deeper into the matter. To talk of Lily bulbs requiring to be acclimatised in this country is simply the expression of a mistaken fancy, for those who talk so cannot be aware that the same identical bulb that blooms one year never bloomed before, and will never bloom again. To talk also of Lily bulbs not being fit for sale until they have been properly and fully matured, is simply deluding ourselves and others, as Lily bulbs are never fully matured until they are actually in full bloom. A Lily bulb is never dormant, though many believe that at times it is so. In some of its parts it is always growing with less or more activity. When the parent plant is beginning to bloom is the time when there is the least motion in the new bulb for the new roots alone may be said to be moving; and until they move with greater activity, they cannot draw from the soil the nourishment necessary to fill up the cells and swell out the bulk of the new bulb.

This is the time, then, when I recommend importers to have their bulbs taken up and sent to this country without delay after being taken up. If at this time they were taken up, we might have the bulbs in October, instead of seeing them advertised as having just arrived in December. At this time (October) we would have an opportunity of planting them properly, instead of groping about in the midst of frost and snow. Besides this, the old bulb would be in a much fresher condition, and, therefore, calculated to form a better protection to the new bulb during its transit. As to the germ or seed-bud, from the time the old bulb has bloomed until the beginning of the next year the germ goes on growing, but at so infinitesimally slow a rate, that in the first five months it does not grow larger than a canary seed. During the next six months previous to the parent bulb coming into bloom, the rapidity of growth is, however, astonishing. Look at the seed bud on p. 143, February 16, and then at that seed-bud grown up to be a fully-developed bulb, at p. 237, September 14. It will be found, if the height and diameter of both be taken, that during these six months the bulb has grown more than 4000 times what it was as a seed-bud, a rapidity incalculably greater than what Nature assigns to bulblets, offsets, or adventitious buds, for, as Mr. Baker truly remarks, these take not less than three years under the most favourable circumstances before they can develop a flower-bearing stem. It is thus that Nature provides for the reproduction of the plant, or there could be no regular annual bloom. Every Lily bulb may be said to be a double bulb—not a twin bulb, for that is a very different thing, but a double bulb—always growing in a double state, but always keeping twelve months' growth between each bulb. The germ, when liberated by the parent bulb, takes two years from its birth to become a flowering plant, after which it dies. At the end of the first year the appearance of the germ (which we shall call No. 1) is shown grown up by the woodcut at p. 237, minus the radical leaves marked F. In this state, and at this time, it also liberates a germ (to be called No. 2). No. 1 now goes on growing in bulk, until at the end of another year it becomes, as I have said, a flowering plant, and then it dies. No. 2 at this time will also have grown one year, and will be the same size as at p. 237, and will also, like its predecessor, liberate a germ (to be called No. 3). No. 2 now goes on for another year, when it becomes a flowering plant, and then, in its turn, decays and dies. At this time No. 3 is twelve months old, and also becomes a parent bulb, liberating a germ. This is exactly how we stand at the present time, the autumn of 1878. With such a marvellous organisation as Nature here presents to us, it would, therefore, be inconsistent with facts were we to call the Lily either a perennial or an annual, and yet there are many Lily growers who know not that such wonderful action is going on within the old decaying bulbs which they are in the habit of handling, and which they say, and no doubt believe, send up every year a flower-bearing stem from their "precise" centre. What have "Amateur" (p. 198) and M. Max Leichtlin (p. 252) to say to this? In March last the former promised to institute some experiments in reference to this matter, and I am waiting, with some degree of curiosity, to know the result.

Dunedin.

TRANSPLANTING AND TOP-DRESSING LILIES.

"R. C. R." (p. 238) was of course right in replanting his L. speciosum when the growth showed the soil to be exhausted; the only alternative would have been top-dressing, as practised by Mrs. Newall (p. 200). In our experience here, where Lilies are grown in good soil, manure (liquid or solid) seems undesirable; but as some Lilies have as much, though shorter and finer, root growth above the bulb as below, it is possible that encouraging this growth of the surface roots may be good practice. In pot Lilies in the orchard house we find it well to repot in fresh soil every year. In some beds at the entrance of a carriage drive, where large bulbs of L. tigrinum Fortunei were planted very thickly for the sake of the immediate effect of close-growing large clumps, last year these were grand and much admired; this year, though very beautiful, the plants were hardly as strong as last, showing that their bed, though made with deep, good soil, was becoming exhausted. In one of these beds I propose to change the soil, in another to top-dress for the sake of experiment. We see every year the effect of top-dressing in the case of our orchard house trees, which are in perfect health, although they have lived in pots for more than twenty-three years. For some years they have been past turning out of their pots, so the earth is grubbed up for some distance down, and fresh soil and afterwards manure are applied, much as Mrs. Newall treats her Lilies. The finest plants of L. auratum I know of at home or abroad are Mr. McIntosh's. These were originally planted singly in good soil, in which they have remained undisturbed for many years. The instance quoted by Mrs. Newall of great clumps of L. candidum flowering perfectly without removal may be due to these Lilies liking a rather strong soil, which takes long to exhaust.

Heatherbank, Weybridge Heath. G. F. Wilson.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Transplanting Lilies.—It may be desirable if Mr. D. Uphill (p. 286) would be kind enough to say at what time he lifted and replanted his Lilies; that is, if he waited, as many do, "until after the flowering season is over, when the leaves turn yellow and fall off and the stems die down?" I have known in many cases, when lifting and replanting were deferred so long, that the bloom was, indeed, anything but good the first year. I have, in fact, found late planting to destroy the very existence of the successional bulbs; and in some of my former papers I have explained the cause. But I have never known such to be the case when the bulbs were lifted and replanted immediately after the bloom was over, or even before the last of the fading flowers had fallen, or I should never have recommended early and annual lifting and replanting to those who have time to spare. I am glad to see that Mr. Uphill recognises the fact that Lily bulbs are every year new and successional bulbs. There are others among your readers who also now recognise this principle, and I trust many more may be induced to follow their example; for it seems to me to be the very acme of inconsistency to profess to know how to cultivate the Lily, and to teach others, while we ourselves are totally unacquainted with the constitution, the organic structure, and the true nature of the bulbs with which we have to deal.—Dunedin.

Alpine Euphorbias.—There are many species, or so-called species, of tall herbaceous Euphorbias in our botanic and other gardens, but few dwarf and neat in habit. E. capitata and E. triflora are two true Alpine species, very dwarf and neat in habit, natives of the Tyrol. They are desirable for rock garden culture, and may be seen in the collection of Alpine flowers belonging to Messrs. Frœbel, of Zurich.

Saxifraga cæspitosa.—Among the multitude of plants that crop up from time to time it requires some degree of boldness to bring a new one into notice; but this Mr. Westland has done, and I can say from my own experience that it will equal any and surpass many of those now in cultivation. Saxifraga cæspitosa, or grœnlandica of some, is very dwarf in habit, and of such an emerald green colour as must at once recommend it. I have long recognised its adaptability for green masses, and have been working up a stock of it, feeling sure that, when better known, it would be a favourite.—Thos. Williams, *Ormskirk.*

Agapanthus minor Mooreanus.—The plant I grow under this name proves a very hardy and truly herbaceous form that flowers freely, and is very pretty. We may, I think, expect much from the various distinct forms of the favourite old Agapanthus, now beginning to be known in gardens.—V.

Bignonia capreolata Hardy.—This plant, usually grown under glass in the United Kingdom, is treated as a hardy climbing shrub in gardens in Central Europe colder than ours in winter. It grows and flowers freely, and trained up a pillar or column is most graceful in habit and in foliage. It is also furnished with little sucker-pointed tendrils, which enable it to climb up a wall like Ivy.—J. H.

Wintering Salvia patens.—My remarks on this Salvia (p. 239) must have been misunderstood, for if I had thought it was perfectly hardy I should not have suggested putting any covering over its roots in winter. I can only say that on the East Suffolk coast it withstood the winters of the past ten years with me under a covering of coal ashes, and that plenty of plants of it may be seen in cottage gardens there that have never been covered for years. I shall also feel equally certain about wintering it safely here in the manner described. Lifting and storing have done more towards exterminating the roots of this plant than ever frost has done. I see so many plants flourishing in the open air now-a-days that used at one time to be kept under glass in winter, as, for instance, Palms of the hardier kinds and Camellias, that I feel more pleasure in trying experiments in testing hardiness than in going back to the old style of making tender plants still more tender by coddling them indoors.—J. Groom, *Linton Park, Maidstone.*

Hardiness of Physianthus albens.—I can assure "W. E. G." of the perfect hardiness of this plant. I have known a plant of it for many years that covers a large space of wall on a Rectory near here, and that every year produces abundance of flowers and fruit.—H. N. Ellacombe, *Bitton Vicarage, near Bristol.*

Nothochlæna Marantæ.—This interesting hardy Fern is grown by M. Frœbel, of Zurich, as an edging to one of his beds of American shrubs; and, on the sunny side of the bed where it thrives very freely as edgings to these beds, Ramondia pyrenaica also grows "like a weed," and is a mass of flower in its season.—V.

Hemerocallis Mittendorfiana.—This uncommon species has been flowering very freely with me of late, the plant being somewhat dwarf, though vigorous, and the flowers large and distinct in appearance from the other species. The flowers also seem later than those of most of the other kinds.—J. H.

Double Buttercups.—All lovers of flowers must feel obliged to the Rev. Mr. Harpur Crewe for the remarks which he has made (p. 285) on these charming flowers. One thing I would wish to ask, Why do we so seldom or ever see the single form of R. aconitifolius? R. speciosus where it does well is a very distinct plant. I believe speciosus to be only a trade or garden name; the true name is R. bullatus. I have a handsome and with it a very hardy double Buttercup, which I have grown for years as R. Steveni fl.-pl. It is twice the size of R. acris fl.-pl., and I am under the impression that it will prove the plant which Mr. Harpur Crewe mentions, viz., R. lanuginosus, as the flowers are very soft, silky, or woolley. There is also a double variety of R. graminifolius.—Thos. Williams, *Ormskirk.*

Autumn Crocuses and Ivy.—At this season, when these beautiful flowers are in perfection, it is well to note the positions in which they are seen to the best advantage; flowering, as they do, when destitute of foliage, they require some addition in that way. I lately saw some producing a good effect growing in masses in Ivy edgings. The blossoms showed well above the Ivy leaves and were protected against being soiled and splashed by heavy rains.—J. Groom, *Linton Park.*

Fuchsias Out-of-doors.—Mr. Groom (p. 281) has done good service in recommending the Fuchsia for autumn blooming out-of-doors, and has, in fact, anticipated some remarks which I had intended to have made respecting it. I believe that there is scarcely one of the cultivated pot Fuchsias that will not survive our ordinary winters with very little care. Although they die down, they spring up in summer and bloom in autumn with a beauty and a vigour never seen in the case of a pot plant. They should be turned out by the hundred in shrubberies and among herbaceous plants. One of the most beautiful for this purpose is a variety called Wave of Life, in my opinion one of the best Fuchsias in existence.—Thos. Williams, *Ormskirk.*

Substitute for Turf.—Lately, while walking through a suburb of a large town, I came upon a front garden so bright and fresh in comparison with others that it appeared like an oasis in the desert. The materials employed were inexpensive; indeed, much less so than those commonly used. I can understand and appreciate the love which the town dweller feels for a bit of green turf, but where the houses are crowded together it is difficult to keep turf in good condition. The substitute for it which I saw in this case, and which I can strongly recommend was the well-known Creeping Jenny (Lysimachia Numularia). This grows wild almost all over the country. It thrives in Grass fields, creeping along close to the ground, and only making its presence known by its bright yellow flowers when the Grass is short or thin. It is equally at home on dry, sandy banks, or by the side of watercourses, with its creeping stems at times under the stream. It makes a close-growing carpet with but little attention, even in the smoky, murky atmosphere of large towns, and in such places for this purpose it is well worth more attention that it receives. In the case to which I am now referring it formed a green, circular plot in front of the dwelling. In the centre of it was placed a good, bold mass of the old red Fuchsia gracilis, and the effect was quite unique. The other plants in the garden were in keeping therewith, as was also the house, which was draped with Veitch's Virginian Creeper, an exceedingly handsome kind, which clings to the wall with a tenacity that scarcely anything short of actual violence can disturb.—E. Hobday.

THE FRUIT GARDEN.

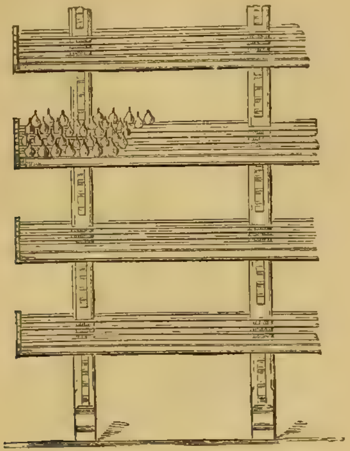
FRUIT STORING.

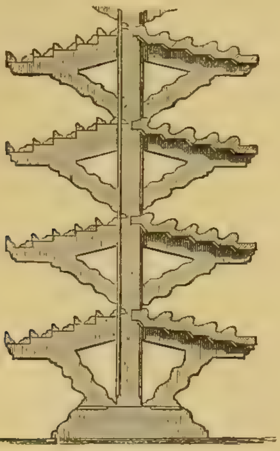
The numerous cares and anxieties of the cultivator do not cease until the fruit is gathered and stored in the manner most suitable to bring out its best qualities and render it fit for use. I will enumerate a few of the points which are essential to success—the choice of trees suitable to certain soils and situations—the proper preparation of the soil—the care to be exercised in planting—stopping the summer shoots—and winter pruning. All these should be sedulously attended to, whether the trees are to be planted in houses, or in gardens and orchards, if the fruit is to be abundant. It is, however, no less the orchardist's duty (if he wish for healthy trees and fine produce), to thin the blossoms, if practicable, but certainly the fruit—this is imperative. Remove all worm-eaten, specked, and deformed fruit, as well as all that grows upon weak or twiggy branches, leaving only that growing on strong and healthy wood. The injury done to trees by over-cropping is incalculable. In Vines, when we hear of Grapes shanking and not properly colouring; when trees become mildewed and present a sickly appearance, we may, in a great measure, fairly attribute these disasters to over-cropping. When Peaches and Nectarines (whether on walls or under glass) cast their fruit at the stoning period; when those pests of the cultivator, red spider and aphis, attack the trees; when the branches become cankered; when small, ill-shapen, and tasteless fruit is produced, we may conclude that the unhealthy state which has invited these attacks and paved the way for these disorders, has been brought about by non-attention to thinning; the vital powers of the trees have been exhausted; they are, therefore, an easy prey to disease. I have often passed by cottage gardens, and seen Apple trees bending beneath loads of small, ill-formed fruit really only fit for pigs. Perhaps Nature has a tendency to over-fecundity, but it is the business of art to restrain this luxuriance (so hurtful in its consequences) within proper bounds. A young tree transplanted into rich soil will, in its early stages of growth, produce an enormous quantity of fruit, but it is absolute cruelty not to check its energies and husband its strength for the demands which will be made upon both in years to come. Legislators are slowly becoming aware that if we wish our working classes to be vigorous in mind and body, it is necessary to prevent young children being put to work until their frames have acquired strength. Why not apply the same principles to trees? Why allow their youthful powers to be so overtaxed as to prevent their ever coming to a ripe maturity? Overcropping in some cases is the result of ignorance or greediness on the part of the grower. He is anxious for an abundant crop, not looking beyond the passing hour, or foreseeing that this over-luxuriance in early youth entails sterility and disappointment in the future. Some few years ago, a friend of mine, who lives in a midland county, built a house and planted a garden in a very favourable situation. Though he could not exactly have a south wall all round, he built a good wall and planted some fine kinds of Peaches, Nectarines, and Apricots. I visited him one autumn two or three years afterwards, and I never saw such splendid crops of all the three fruits; the wall literally glowed with crimson and gold. But amid these glories I could not help uttering words of warning—"You will suffer for this in future years. Why did you not have them thinned?" I spoke to deaf ears. My friend, more at home in his library than in his garden, and being rather of the *Carpe diem* sort of philosophers, treated my remonstrances with provoking indifference. But it is six years since that autumn, and he has never had another crop of Peaches. He has often consulted me about his poor trees, and he and his gardener have tried all sorts of nostrums advertised for their relief, but in vain; the mischief done in infancy and youth can never be repaired. While on the subject of remedies and insect destroyers, I cannot forbear quoting a card which I received some time ago from an anonymous friend through the French post: "*Apropos de Roses. Les pucerons. De barbouiller les pousses avec du marc de Café encore frais. Cette substance tue les pucerons et les empêche de reparaître.*" I have never tried washing shoots attacked by aphis with fresh Coffee grounds, as recommended here, but I give the recipe, in order that any of your readers may do so if they think fit.

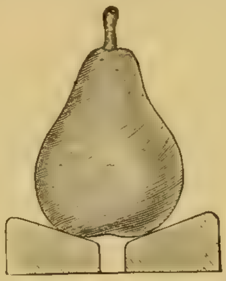
To return to fruit thinning. This demands as much care and science as any other gardening operation. Let the orchardist make up his mind resolutely to sacrifice part of his crop to ensure the perfection of the part he retains; the loss in quantity will be amply made up to him by the gain in quality and weight. I once witnessed an interesting experiment. Two Vines of the same kind were planted side by side near a wall, and treated precisely alike; but one was allowed to bear as many bunches as it would, the other was carefully thinned both in bunch and berry. When the fruit was gathered it was discovered that the unthinned Vine had borne four times as many bunches of Grapes as the other; but the crop of the thinned tree weighed heavier and was of far superior quality. Let any one try this experiment for himself with any kind of fruit, dividing his wall or growing space into square yards, and he will be convinced that by properly thinning (and this had better be over than underdone) the weight of fruit per yard will be greater than if he had suffered his trees to be overcropped; he will besides enjoy the satisfaction of producing fine and perfect fruit, and of preserving the health and vigour of his trees. If we look at the matter from a mercantile and economical point of view, it must surely be the grower's interest to produce the best fruit, as it commands the highest price in the market, and obtains the readiest sale. Let any one walk through a fruit market, and he will observe that the best fruit is, as a rule, eagerly bought up at a good price, while that of a poor and inferior quality often remains on hand, or is disposed of for any price it will fetch. I am surprised that growers do not offer to the public more frequently picked specimens of the best fruits. Carefully arranged, these might replace advantageously, in some cases, the untidy heaps carelessly massed on the stalls or in the shops. I am here speaking of country shops. Of course, in London and other large towns things of this kind are better done; but even here there is great room for improvement. Our neighbours across the channel show their superiority to us in this as well as other similar matters. Contrast the fruit and flower shops and markets in London with those of Paris.

The next care of the grower is the gathering and storing of the fruit, so as to bring out its best qualities. All wall and indoor trees should have any leaves which may cover the fruit carefully removed a few days before the time of gathering. This allows the rays of the sun to penetrate, and impart to it a fine colour. Any moisture clinging to it is thus evaporated, and the sugar or saccharine matter becomes properly diffused. The period for gathering depends in a great measure on the season; no precise rule can, of course, be given. With regard to Apples and Pears (and this holds good with other fruits) they acquire, as they approach maturity, a fine colour and a somewhat powerful scent; they are also soft to the touch, particularly the latter, near the stalk. Autumn Pears should be gathered from ten to fifteen days before they become perfectly ripe. Winter ones may be allowed to remain on the trees as long as they can do so without injury from frost, but must be removed when vegetation ceases. "In some seasons," says a French writer, "winter Pears may be gathered during the second or third week of October." This is, if the year has been hot and dry. If, in such a case, they are allowed to remain too long on the trees they become woolly, soft, and doughy. A fine, dry day should be chosen for the purpose. The fruit should be very carefully gathered, taking care to secure the stalks. It should be placed in a basket and carried to the fruit house. All Pears, even summer ones, are best when allowed to ripen in the house rather than on the tree. I must not forget to remark that it is quite unnecessary to strip a tree of its fruit, whether mature or not. The careful orchardist will watch his trees, and daily, if needful, remove such fruits only as are fit to gather, *i.e.*, which part readily from the tree, leaving the others until they also are ready. This prolongs the duration of the crop. The fruit now stored in the house exudes for several days a greasy moisture, which should be carefully removed, to prevent decay, and the wiping repeated until all the moisture is discharged.

I will now add a few words, which may not be out of place here, as to the mode of arranging a fruit or store house, and the necessary conditions to be observed in its construction. The conditions for keeping fruit well are a dry atmosphere, a cool, steady temperature, and darkness. To insure these as far as possible, the house should be placed in a dry, airy situation, and its outer walls contrived so that the air freely circulates round them; this will render the temperature cool and equable. A free circulation of air is also indispensable under the floor; or the floor should be made impervious to moisture. While ventilation is attended to, the doors and windows should fit closely so as to exclude frost; double doors are a great advantage in preventing a too great ingress of air. The walls should always be double, the outer wall being the thickest, especially on the north side; the ceiling should likewise be double. In case, however, of a fruit house being constructed out of some other building, it is advisable to line the walls with wood, leaving a small space between the wall and the lining, which may be filled with sawdust. The light should be excluded by means of blinds or shutters, as it is an established fact that fruit keeps best in darkness. It has been observed that fine specimens of Apples and Pears, when placed opposite a window, deteriorate both in colour and quality. Various methods have been recommended to absorb the superfluous moisture generated in fruit rooms. M. du Breuil proposes to place a layer of chloride of lime in a wooden trough lined with lead. This substance will absorb double its own weight of moisture from the atmosphere, and as it liquifies it may be received into a jar placed below the trough, then removed, and the water evaporated, so as to leave the chloride of lime again fit for use. Great care must, however, be exercised in the use of this substance, as the fruit might acquire an unpleasant taste. A safer material would be gypsum, or some other absorbent and non-effluent agent. As regards the internal arrangement of a fruit room, shelves should be placed all round or on stands in the centre, the shelves or stands being arranged so that each fruit can occupy a separate space and be easily examined without being touched, the damaged fruit being capable of removal without disturbing any that are sound. Tablets should be hung near each variety, to contain written observations as to the time of gathering, and to indicate when maturity may be expected, together with any other particulars interesting to the pomologist. Perhaps the most simple is a small white slate tablet; this is easily written upon and easily read. The most perfect fruit house (says André Leroy in his "Pomological Dictionary") is that of the Baron James de Rothschild, at Ferrières (Seine-et-Marne); and in the new edition of the "Parks and Gardens of Paris" the illustrations of the fruit stands and Pear rails in use in that house are given. Some prefer to place fruit in shallow drawers or boxes, covering them with clean bran or dry sand; either of these answer well, as they fill up the interstices and absorb any moisture which may be given out, or a piece of flannel forms a cheap and clean covering. It is an advantage that this can be so easily raised and the fruit examined without being disturbed. Many Pears which are considered decidedly inferior become delicious when ripened in a gently warmed room, particularly the varieties which are dry and tough when left to themselves. I would recommend placing these in drawers or on shelves in a warm cupboard; this treatment seems almost to change the character of the fruit.


Portion of Pear stand at Ferrières.


End view of Pear stand.


Section of Pear rail in the fruit room at Ferrières.

Before I close I cannot forbear alluding to various ancient methods employed for the conservation of winter fruits. Some of them may not be without interest to the modern grower. The Greeks and Romans had various plans of their own, some of which seem to have succeeded, while others appear fanciful and impracticable. Their authors recommend "hanging up Pears by their stalks," "placing the fruit in earthen vessels and covering them with wine which had been boiled." More rational, I think, is the receipt for laying them in sawdust or shavings. Others advise storing Apples and Pears which have been gathered in fine dry weather in vessels, and covering them with lids coated with gypsum. The vessels are then to be buried in a place where the rays of the sun cannot reach them. Another writer advocates laying Pears as they begin to ripen in honey, but so that they do not touch each other. This rather reminds me of an old clergyman of my acquaintance, who was a most indefatigable reader of romances, but he preferred them pure and simple, and much objected to the introduction of religious discourse into his favourite stories. "Sermons," said he (as I ought to know), "are very good things in their way; so are novels. But why mix them when they are so excellent taken separately?" This applies to honey and Pears; they are too good to be mixed. The old French authors have written a great deal about the gathering and storing of fruits. "Take care," says Merlet, in his "Abrégé des Bons Fruits" (1690), "not to defer gathering your autumn Pears after the beginning of October, or your winter varieties beyond the end of that month, according to the season; but above everything gather them at the wane, not at the increase, of the moon, or when she is at full, for at those times fruits derive much nourishment from the planet." La Quintinye, Director of Orchards to Louis XIV., in his elaborate and scholarly work, entitled "Instructions pour les Jardins Fruitiers et Potagers," describes a fruit house which might well serve for a pattern now. My space will not allow me to quote the passage, but I commend the book to the careful perusal of amateur as well as professional pomologists. W. Newton.

Hillside, Newark.

PLUMS UNDER GLASS.

Perhaps no other hardy fruit is so much improved in appearance and quality by being grown under glass as Plums. This has long been demonstrated, but in comparatively few gardens. Those of our readers who have been in the habit of visiting such places as the Royal Gardens at Windsor, Trentham, and Chatsworth for the last quarter of a century must have been struck with the immense crops of Plums under glass, and particularly with their improved colour and quality. And the wonder is that Plum houses are not more numerous than they are, seeing that the finer varieties are so much appreciated in tarts and for dessert. If they required any expensive preparations for their culture, or were at all a precarious crop, under glass, their not being more cultivated in this way would not be so much to be wondered at or regretted. They will succeed in any ordinary soil, and under glass are one of the most certain of crops. Moreover, they stand forcing to bring them in considerably before they can be had from walls or cool houses; and by growing some of the delicious late varieties, rendered still more so by being grown under glass, the season of Plums can be prolonged far into the autumn, or even into the winter, when other stone fruits are past. Last February we planted a very considerable extent of orchard house with Plums, and many of them bore heavy crops of splendid fruit, while the crops on previous companions on the open wall were all but *nil*; and so superior in size, appearance, and quality were those under glass, that they would scarcely pass for the same varieties. Probably the most profitable and best cooking Plum under glass, as it also is out of doors, is the Victoria. Washington, Magnum Bonum (white and red), and Hulling's Superb are excellent cooking varieties for orchard-house culture. For dessert, the best are, perhaps, Green Gage, Reine Claude de Bavay, Jefferson's, Transparent Gage, Kirk's Seedling, Coe's Golden Drop, and Ickworth Imperatrice. The two latter named varieties are invaluable for late dessert, and their quality is vastly improved by being grown under glass. By lifting trees from the open walls that are in a bearing condition, but not very old, a good crop can be had the same season; so that quick returns can be had from any glass that may be devoted to Plums.—"The Gardener."

Doyenne Boussock Pear.—This excellent variety should not be overlooked by any one who possesses a dozen Pear trees, and who intends now to add to their number. It has to recommend it four very desirable peculiarities—size, appearance, flavour, and productiveness. With regard to the first and last I may mention that I have just taken from one stalk three, the combined weight of which amounted to 1½ lbs., and all three were nearly of equal weight; and as to the second, not only is the fruit handsome, but the foliage often becomes a deep red before the leaves fall. My tree, for I have only one of this variety, is on Quince roots, and is trained on a wall facing due west. I have never known it fail even in bad seasons. Orders for fruit trees should be sent without delay if they are to be planted to the greatest advantage.—B. S.

Protecting Vine Borders.—That I may not appear to have wronged Messrs. Hinds & Smith in this matter, will you allow me to say once and for all that Mr. Hinds came forward voluntarily to "collect evidence on the points at issue" between myself and others, which "points" he clearly understood and acknowledged to relate to the practicability of producing early Grapes from Vines with their roots all outside and unprotected by fermenting materials; and to prove that such had been done successfully. he cited, with Mr. Smith's entire concurrence, the case of an early Vinery at Waterdale, with the roots outside, that was carrying its sixteenth crop of early fruit (also an error), specifying that in the case of other Vineries there the roots were inside as well. Now this Vinery is one of those where the roots are "comfortably inside," and receive regular supplies of warm water, as Mr. Smith has told us. The latter may not have written to support my opponents, but he has been a consenting party by his silence, while Mr. Hinds declared he had his entire concurrence in the statements which he made. Thus the last case of evidence against me is demolished as satisfactorily as I could wish.—J. Simpson, *Wortley*. [Here we think this discussion must end.—Ed.]

TREES AND SHRUBS.

DECAY OF OAK WOODS IN SOUTH YORKSHIRE.

This is a subject which ought to command our earnest attention. Hereabouts the trees, and principally the Oaks, in not a few woods are dying off prematurely and rapidly. In one Oak wood, nearly 2000 acres in extent, on this estate the trees are going off at an alarming rate; thousands are in an advanced state of decay, and there are few which are not more or less affected. To the public, as well as to the proprietor, this is a matter of concern, as the wood is entirely free to the former three days in the week, and is, in fact, the principal resort of holiday seekers, who look forward with dismay to the destruction of about the only bit of semi-natural forest in this part of the country. The decay has been going on for many years among young and old trees alike, and has not attracted attention now only, but the subject has been revived lately in the local papers, and I think might be adverted to in The Garden perhaps more usefully than anywhere else, as some of your readers may have suggestions to offer in reference to the matter. Two theories have been put forward as to the cause of the decay. The latest is that propounded by some of the members of the Geological Section of the Yorkshire Field Naturalists, who lately made an excursion to the wood in question, when the premature decay of the Oak trees formed a chief topic of discussion. They came to the conclusion that the decay was attributable to the exhaustion of potash in the soil, and that the best remedy would be a change of successive plants; a conclusion and suggestion which, I imagine, will appear rather extraordinary when taken together, seeing it is hardly possible to find any suitable "successive plants" that would require so little potash as the Oak; where it cannot find the small quantity which it requires, it cannot be expected that a useful timber tree like the Larch, for example, which requires a great deal more potash, would long thrive. Besides, the potash is to a great extent restored to the soil by the decaying leaves and vegetation generally. Further, plenty of plants thrive in the woods that require more potash than the Oak, and I know from long experience that the soil suits Vines and vegetables requiring the same in large quantities. This, however, is the "Naturalists'" opinion, and I give it here. The next hypothesis is put forward by a forester of extensive experience, and who is probably better acquainted with the woods in this locality than any one else, having, in a practical capacity, been connected with them for a long period. His opinion, as stated in a provincial daily paper, is that the trees were injured by the severe frost of 1860-61. The frost, he states, lasted a considerable while here, as it did elsewhere, and during the time a heavy fall of sleet occurred which froze upon the trees, making them look "as if crystallised" from top to bottom. From that date, he adds, the decay has been observed. Now this is the problem I wish to put to those of your correspondents who are versed in woodcraft—was it the frost that did the injury under the conditions described, for I fear the potash theory is hardly tenable? My own opinion is that the frost had nothing to do with it. In the first place I have witnessed the phenomenon of trees coated with ice in the manner above described more than once in different parts of Scotland without the least injury to the trees being the result, and in the second place one would expect that a frost severe enough to injure native species seriously would first cut down all the more tender exotics, which the frost of 1860-61 did not do in this district. It did so in many other places both in England and Scotland. Near Edinburgh the frost killed not a few Araucarias down to the ground; also Aucubas, Laurustinus, Rhododendrons, great quantities of Roses, and even Laurels, but it did not injure any of the native trees. But when I came here in 1864 I was surprised to find that the above trees and shrubs and even Camellias in the open air had passed through the winter in question without injury, and they are growing on the same formation and in the centre of the affected district. These facts led me to conclude that our high-lying and well-drained district did not suffer from severe frosts, a conclusion which subsequent experience has confirmed, as during the last fourteen years we have never had such severe frosts as have been experienced frequently both north and south of us. It is seldom we have 15°, very rarely 20°, which has not been exceeded more than once or twice, and only for one night or so. Another fact which disproves the freezing hypothesis is that the decay among the Oaks has been gradual. There are many trees whose decay, I fear, dates back beyond 1860, while there are many that are just beginning to show signs of it. Is it reasonable to suppose that a frost which injured the trees seriously nearly twenty years ago is only beginning to show its effects now? Lastly, is there any record of the Oak or other native trees being injured by frost under ordinary circumstances? My belief is that decay is not attributable to the cause assigned by the naturalists, nor to the frost of 1860, but to the presence of the numerous iron and coal works that dot the country in every direction as far as the eye can reach, and which are continually sending forth volumes of soot, which settles upon the trees and chokes up the pores of the leaves. One can hardly pick a leaf out of the woods anywhere that is not black with soot, especially in dry seasons, when it accumulates to quite a thick coat. This alone would be sufficient to produce decay in the end, but in the wood in question there is another cause at work, and that is the caterpillar, which has for years back stripped all the earlier foliage off the trees as completely as ever the caterpillar did a Gooseberry bush. In July thousands of trees may be seen as bare as they were in December. Later in the season the caterpillars go into the chrysalis state. The trees then make a feeble growth, and these causes having been in operation year after year, the results are, as has been stated, premature decay. I should be glad, however, to hear the opinions of your correspondents on the subject. J. S. W.

FOREST WORK FOR OCTOBER.

Other work being well in hand, undivided attention should be paid early this month to the subject of planting, for though there are some soils which, from their excessive wetness, may require to be planted in the spring, yet the greater part of the land which can be profitably cultivated as woodland ought to be filled up before the end of November. It will be found that there is much truth in the old aphorism—"Plant before Martinmas and *command* success, plant after Candlemas and *entreat* success." With regard to the preparation of the soil, it may be observed that the majority of high-lying districts, the soil of which is generally of a silicious character, admit of but little previous cultivation, as any stirring or loosening of such land would deprive it of its power of retaining sufficient moisture to nourish the young plants. Here, therefore, the system of notching-in will be found the best; and two years' transplanted Larch or Scotch Fir which has stood one year longer in the lines will generally be found suitable. The small proportion of the alkalies which such soils contain unfits them in most cases for the growth of anything besides the Pine and Fir. But upon richer soils and in low-lying districts, where alkalies abound in the deep loams, marls, and clays, almost any kind of hard wood may be planted after a good preparation of the land. The clays and iron-bound gravels in particular should, previously to planting, receive a deep trenching and thorough drainage; and if the holes be dug some months previous to their being used, so much the better for the trees. The advantages of a home nursery in which the plants required for filling up woodlands may either be reared from seed or grown from young stocks purchased of nurserymen are very great. The planter who has such a nursery to fall back upon can select his own time and weather for transplanting, and is thus exposed to none of the risks which attend the long carriage and damage often sustained from close packing of nursery stocks. In dry weather it will be a great advantage to immerse the roots of the young plants in a thick puddle of adhesive soil and water as a protection during their removal. Where the land selected for planting has previously been occupied by trees, all remains of the former crops should be carefully removed or burnt upon the spot. The condition of the soil will depend much upon the previous crop; for while Larch improves the land, and Oak during the latter years of its growth adds to the saline matter of the soil, the Norway Spruce, the Sycamore, Ash, and Elm are very exhausting. After such crops, a few years' cultivation under corn and roots will prove highly beneficial to the land before replanting it with trees. Such a system will also enable the planter to thoroughly incorporate with the soil those manures which are required and which are much better applied to the intermediate crop than to the trees themselves, unless in the form of compost. October should be a busy month in the nursery, where the preparation of seed beds and the sowing of such seeds as are already ripened will require attention. Independently of the ravages committed by birds and the smaller rodents, this is decidedly the best time of year for putting in Acorns, Walnuts, Hazel Nuts, Spanish and Horse Chestnuts, and if these autumn planted seeds entail a little more trouble, the cultivator is amply compensated by the start which his plants get in the spring. A good loam is well adapted for the seeds just named, but where the land is of a heavy character, it is a good plan to lay the seeds in rows upon the surface of the beds, and to cover them up to a depth of 3 in. or 4 in. with the soil shovelled from between the beds, thus enabling them to lie high and dry during the winter. Early in the month put in cuttings of Ribes, Dogwood, Portugal and common Laurels, Elders, Alders, Limes, Poplars, Planes, &c.; also layer Limes, Elms, Maples, and such other trees as are propagated by that method. The Norway Maple ripens its seeds early in the month, and these may be sown as soon as collected. A bushel of this seed of average quality, in a favourable season and with proper care, will produce about 12,000 plants. A bushel of Acorns under similar circumstances will produce from 6000 to 8000 trees; Walnut, 4000 to 5000; Horse Chestnut, 2000; and Sweet Chestnut, about 3000. October is a good time for planting out young Hawthorns or Quicks to form permanent hedgerows. If two-years'-transplanted stock be used, it may be inserted at distances of from 6 in. to 8 in. apart. A double row, with the plants placed triangularly, is preferable to a single one. The plants may be cut over within a few inches of the ground, which will generally ensure for them a good start in the following spring. Upon light sandy land, where the Hawthorn does not generally flourish, it will be well to use a compost consisting largely of clay, with the addition of a little lime. I have also found a small quantity of genuine bone superphosphate very beneficial to young Quicks. Upon these light soils an admixture of Beech, in the proportion of two or three to every Quickset, will ensure a thick, good fence; but the Beech must not be cut over at the time of planting. The beginning of this month is a good time for cutting over near the ground two-years'-transplanted Oak, Ash, and Sweet Chestnut, as well as for undercutting strong nursery stocks of the hardwood kinds, which are not intended to be removed for another year. Layers of Lime, Elm, &c., in the nursery may also be severed from the parent stool and replanted, and other shoots may be layered to fill up vacancies. Coppice layers may also be similarly treated where it is not considered necessary to extend them further. A. J. Burrows.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Populus suaveolens.—This is one of Dr. Regel's introductions from Central Asia, and promises to be a valuable tree. It possesses a very agreeable aromatic odour, and hence the specific name. This is very evident when the buds, now well filled, are rubbed with the finger. I fancy it is not yet in our nurseries, though it is in some Continental ones.—J. H.

Xanthoceras sorbifolia.—This fine-flowering tree, of which a coloured portrait was given in The Garden (Vol. VIII., p. 524), has proved quite hardy in Switzerland. Its foliage is distinct and ornamental at this season. In the Garden of Plants the first specimen of it flowered against a wall. In Switzerland it grows well in the open ground, as it no doubt will do with us.—R.

The Erect-growing Wych Elm.—A pyramidal, or rather columnar, tree, of which the above appears to be the relationship, is a striking object in some south German gardens. It is well deserving the attention of planters, and would form a very striking contrast to the far more common and invaluable Weeping Wych Elm, of which there is a good old specimen in the Royal Botanic Gardens, Regent's Park.—V.

Paulownia imperialis.—As an instance of the great growth of trees this summer I have measured a shoot of Paulownia imperialis of this year's growth. It is 9 ft. long, and 5 in. in girth at its base. I suppose it has now stopped growing.—H. N. Ellacombe, *Bitton Vicarage, near Bristol.*

The Lime Tree in Towns.—We have so often condemned the common Lime tree for towns that we make haste to do justice to the American Lime as a street tree. It retains its leaves quite fresh long after those of the European Lime have perished. There is a very fine variety of this Lime raised a good many years ago by M. Frœbel, of Zurich, of which there is one specimen tree planted in a street in Zurich, where it may be seen and compared with Tilia alba, from which it was raised, and the European Lime. Judging by what is seen there, it would seem to be a very valuable variety. It is called spectabilis by the raisers.

PLANTS ROUND SAN FRANCISCO BAY.

We have now rounded the point, and reached the valley beyond. There is the usual sandbar, backed by a small lagoon, from which a rillet flows across the beach. Here we leave the shore and ascend the hill, gathering the wild flowers as we go. Patches of Lupinus micranthus and Orthocarpus erianthus fleck the hillside with blue and white, but the show of the flowers is not on this southern side, exposed to the rough westerly blasts of the Pacific as they sweep through the valley, but on the moister and comparatively sheltered north-eastern slope. One of the most abundant of flowers, here and in the whole vicinity of San Francisco, is the Œnothera primuloides, a stemless plant with yellow blossoms, each on its own peduncle, reminding us of the Primrose. Another flower, plentiful on this hill, but very local in its distribution, is the purple and white Collinsia bicolor, belonging to the same order with the Mimuli, two kinds of which (Mimulus luteus and M. glutinosus) may be found near by, the former by the water-courses and in the wet places which abound after the heavy rains, the latter on the dry hillsides. The great yellow, Daisy-like Layia platyglossa, with its ray florets tipped with cream colour, from which it has earned the name of Tidy-tips, is to be seen here and there, but does not show as it does across the bay, at Oakland, where whole fields are golden with its blossoms. The Eschscholtzia californica is here, of course; there is not a month in the year when it cannot be found, but now it is in its glory, its gorgeous orange petals inducing every urchin that comes along to gather the "Lilies," as he calls them. Another of the Poppy tribe, the little Cream-cup (Platystemon californicum), may be found if looked for, for it is modest—unlike Poppies in general. Orthocarpus is a very conspicuous genus in California generally; on this hill-side we gather, besides the white one already mentioned, the purple and yellow O. castillejoides and the tiny-flowered O. pusillus. Nemophila insignis is almost out of blossom, yet we find a few, and among the loose stones higher up the hill we find one of its rarer relations, the rough, almost prickly, Phacelia loasifolia of Torrey. The more common Phacelias, P. circinata, with its coarse foliage and cat's-tail-like curled flower-spikes, and the more delicate P. tanacetifolia, we do not meet with in this ramble. The Rose Order is represented only by one plant, the humble Acæna trifida, a near relation of the Sanguisorba or Burnet. Almost the only shrubs to be found are a dwarf Oak and the Poison Oak (Rhus diversiloba), the latter unfortunately only too common, as we find to our cost next day, when our wrists inflame and become covered with the pustules produced by its juice. It lurks in every bunch of tall herbage, its glossy, green leaves and greenish racemes of flowers mingled with the Vetches, Phacelias, and other harmless plants in so intricate a way that it is almost impossible to collect them without contact with it. On the hill-sides it is low and straggling, its roots running to great distances under the surface, and throwing up stems and leaves in unexpected places; in the copses it forms large bushes, alone or mingled with other shrubs; but in the forests it is a huge climber, mounting the tall Pines and Firs and strangling them. When a climber, its leaves are much larger and lighter in colour, and it is usually believed to be a different plant from its humbler brethren of the meadows, being distinguished as Poison Ivy.—"American Naturalist."

Vitis Thunbergi is a very robust species of Vine from Japan with large and handsome leaves (some nearly 1 ft. across) which turn a fine red colour late in autumn. There is a vigorous plant of it growing against a house in the botanic garden at Zurich.

Yucca baccata.—This remarkable species has proved hardy with me, as has also Y. angustifolia. Of both I have but small plants, but they have stood two winters out-of-doors without injury. —J. H.

Rheum palmatum tanguticum.—This is the name of a very fine, recently-introduced kind of Rhubarb, which, as regards vigour of growth and size, seems distinct from the old Rheum palmatum, which is a smaller plant, and generally a very slow-growing one. Indeed, it often "pines away," to use an expression frequently used in a recent book on floriculture. R. tanguticum, on the contrary, increases rapidly. The fine and boldly-incised foliage will be welcome to those who grow the other hardy species now in our gardens. There are some fine plants in the botanic garden at Zurich. It is one of Dr. Regel's introductions.

Astragalus adsurgens (Pall).—Of the very numerous species of Astragalus but few have come into cultivation, and, truth to say, many of them have few charms to make them worthy of a place in gardens, but this species from the Baikal region is one of the exceptions. It is a dwarf species, producing numbers of violet-carmine flowers, and is well worthy of a place in the rock garden. It has been introduced by Messrs. Frœbel, of Zurich.

PLATE CXLVIII.

THE LARGE-FLOWERED MOUNTAIN SAXIFRAGE.

(SAXIFRAGA OPPOSITIFOLIA PYRENAICA MAXIMA.)

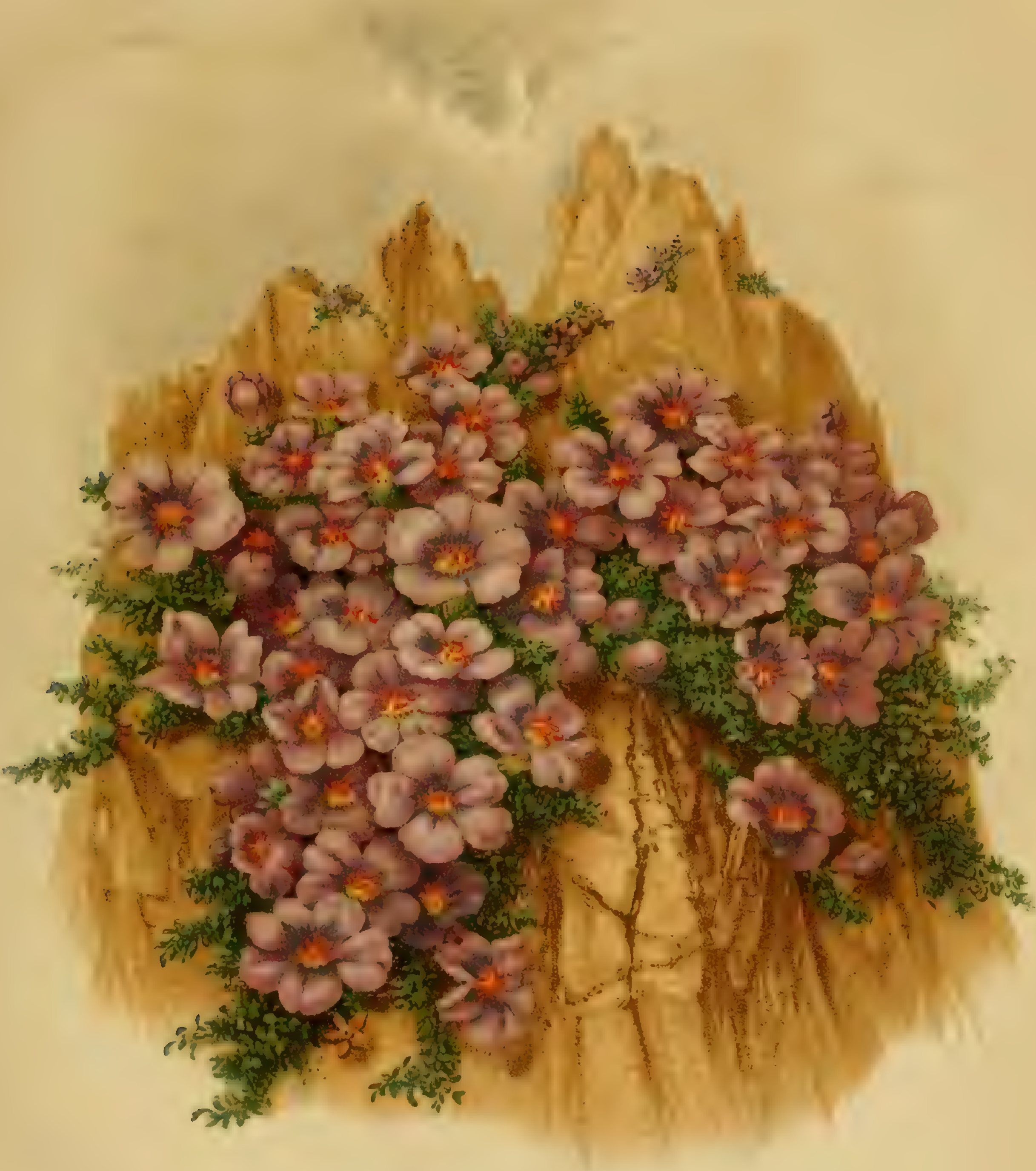
This is, as its name implies, the largest-flowered variety of the Pyrenean form of the purple mountain Saxifrage. Its colour is light pink, or flesh colour, and much paler than that of the ordinary type found on the mountains of Great Britain. In habit, the Pyrenean plant differs considerably from the British one. It is much more robust, less densely matted, and the rosettes terminating the shoots are erect. The individual flowers are as large as a shilling. This Saxifrage should be planted in rich loam, in deep, well-drained fissures exposed to the sun, or overhanging ledges where the main roots can penetrate deeply into fissures behind. For the specimen from which our plate was prepared we are indebted to Messrs. Backhouse & Sons, of York.

THE INFLUENCE OF AGE ON SEEDS.

Opinions, like fashions, revolve in circles. In my boyhood most cultivators believed in the age of seeds as a potent factor in the production of abundance of good Melons and Cucumbers. Not only were old seeds believed to produce the most fruitful plants, but the quality of the fruit was thought to be improved by the age of the seeds. So general was the belief in these facts that artificial means were adopted to give similar effects to that attributed to age. Amongst these the best modes were storing seeds in warm kitchen drawers or seed rooms with stoves, and also carrying the seeds constantly in the waistcoat pocket, the latter being by far the most popular mode of giving artificial age to Cucumber and Melon seeds. I think, as far as that family of plants are concerned, Signor Cazzuola is right. There must be some mistake about the seeds that refused to grow in the experiments of M. Laizier, referred to in Mr. Quin's article (p. 293), for Melon and Cucumber seeds ten or even twenty years old vegetate freely enough if they have been properly harvested and kept. Many years' experience leads me to the conclusion that there is some hidden law of correlation between old seeds and fertility. Vitality might become weakened by age, and so a stronger tendency to reproduction of seed to perpetuate the species be developed. In the case of some seeds, such as Cucumbers and Melons, the growth has often been observed to be as vigorous as plants produced from old seeds. Of course in regard to other seeds the terms new and old must be interpreted in relation to each species of plant. Comparatively few seeds retain their vitality so long as Melons or such plants. The subject is worthy of re-investigation. Probably not a few of the apparently inscrutable changes of plants and flowers under identical conditions might be explained by a reference to the different ages of the seeds that produced them; and possibly not a few of our crops might be improved did we know the best aged seeds to sow to produce the special results which we have in view. For example, if it be true, as M. A. Malet asserts in the same article to which I am referring, that the newer the seeds the more vigorous the crop, and the greater length it will run, new seeds would be best for Celery, and old probably for Tomatoes. These two plants—the one grown for blanched stems and the other for its fruit—would form admirable subjects for experiment. Seed-bearing ruins the one, and an excess of growth is almost the worst thing that can happen to the other in the open air in our climate. D. T. Fish.

New Zealand Bramble (Rubus australis).—Rarely do we see plants, which in point of structure are curious or abnormal, possess sufficient merit to render them desirable objects of general culture, but this little New Zealand Bramble admirably combines these qualities. It is singular on account of the leaflets being reduced to small white prickles; a small portion of the leaf only is sometimes seen growing from the points of the leaflets. The profusion of these abortive leaves, beset with numerous white prickles, with which the stems and branches are also covered, renders it an entangled mass, which, however, presents a very graceful appearance, even in the absence of flowers, which I believe have not been produced in this country. It is a somewhat scarce plant, but should be sought after by every lover of the curious and beautiful in plants. It should be planted in good soil on the rougher parts of the rockery.—W.

Veronicas in a Cut State.—Veronicas should be grown more extensively than they are, for they yield an abundance of flower spikes fit for cutting until late in the year when out-door plants become somewhat scarce, and, being of many shades of blue, they intermix well with flowers possessing brighter colours.—J. G.



THE LARGE FLOWERED MOUNTAIN SAXIFRAGE

GARDENING FOR THE WEEK.

Indoor Plant Department.

Early-flowering Tea Roses in Pots.—Those required to open their flowers under glass through the last months of the year, with little more warmth than that afforded by the protection they thus receive, will, after having been treated as advised, during the spring and summer, especially as to the flowers being removed from the growth they made early in summer, now be furnished with numbers of buds in different stages of development. The plants should at once be taken indoors and placed in a house as light as is available. If there is convenience, one portion may be subjected to a little warmth, say as much as will keep the temperature up to 50° in the night, with a corresponding temperature on dull, cold days; when the weather is bright and fine no artificial heat will be required in the daytime. These will come in quickly, affording a gradual succession of flowers for some weeks, to assist the development of which I should not recommend much side air to be given, opening the top lights when rendered necessary by the sun raising the heat too high. By these means whatever soft, tender, young growth the plants are making will go on, and form buds that will expand in succession; whereas if they were subjected to cold draughts the young leaves are almost certain to become affected with mildew. The flowers of the plants in question will precede the portion put in cooler quarters. Previous to taking them indoors it will be advisable to wash the whole with Tobacco water. This should be done even if no trace of insects be discoverable, as there may exist the larvæ of green fly or red spider, which, if present, will at once come to life, and entail very much more labour in their destruction.

Pot Roses for Later Blooming.—The pot Roses, both Teas and Hybrid Perpetuals, intended to succeed the foregoing, now plunged out-of-doors, should not be allowed to get saturated with rain if the weather should become wet. To those not much experienced in pot Rose culture the knowledge that Roses are hardy, or in the case of the tenderest varieties, all but so, often leads them to forego the attention given to other plants equally or better able to bear the influences of our changeable climate; consequently, they are left out and get the soil reduced to an unhealthy, soddened condition with the heavy autumn rains, the result being that their roots become stagnant and injured, and when placed in warmth for forcing they are not in a condition to act, the effect of which is that the flowering is meagre and unsatisfactory. Where they can be placed under the protection of frames, pits, or even loose lights, open, airy, unoccupied Vineries, Peach houses, or any similar places, they ought to be transferred thereto; these failing, if the weather be very wet, the plants should, during the time, be laid on their sides.

Propagating Roses by Autumn-inserted Cuttings.—The desirability for general garden purposes of growing all but a comparatively few varieties of Roses on their own roots begins to be generally acknowledged. With such varieties as are new and scarce, the plea of expediency for increasing them by budding is correct, the reason being that every bud can almost be reckoned on to form a plant; whereas in propagating from cuttings it is usual to not make them of less than two eyes in the way ordinarily adopted where the rooting process is effected in heat; and, even in this case, it takes very much more time to grow them up to a useful blooming size than when large, stout pieces of the shoots, necessarily having several eyes, are used, from 8 in. to 10 in. long, and these are more certain to root. There is no better time than the present for putting them in, for, although no roots are likely to be formed previous to spring, still the base becomes callused over, and in such condition the cuttings are better able to stand through the winter and form roots early in the spring than if taken off later on when the leaves had fallen, and, consequently, the wood was in a harder state, in which condition there is a less disposition to make roots. Pieces of the shoots, such as above mentioned, should be taken off now and severed at a joint, selecting good stout growths for the purpose, as these will make double the growth next summer that weaker cuttings will. The most suitable place for them through the winter will be a cold frame, placed facing the south; in this position the warmth of the sun in spring will have its influence earlier on the production of roots. If the soil naturally is not of a free, open nature, enough sand should be added to make it sufficiently light, more so considerably than that which Roses succeed best in when planted permanently; the advantage of this is that when the plants have become well rooted they can be taken up for removal with very little loss or mutilation of the roots, as compared with that which is inevitable out of soil that is heavy and adhesive. With a view to still further adapting it for the purpose, it should be thoroughly broken and pulverised, so as to reduce all the hard lumps and fully incorporate the sand with the whole. The cuttings may then be inserted in a somewhat slanting position in rows about 6 in. apart, placing them about 2 in. asunder in the rows; they must be put in deeply, only leaving one or two eyes above the surface, treading the soil firm about them. In this way a large number of Roses may be raised in a good-sized one or two-light frame that, with proper attention, at the end of a couple of years will form large bushes producing quantities of flowers, and even towards the close of next summer will furnish some. If the best free-growing, free-flowering varieties be chosen, there are few soils and situations in the country, away from the smoky influences of large towns, where Roses may not be grown with the addition of, where necessary, preparing the soil in the manner recommended in a recent calendar. In such situations even those who have attempted to grow them worked on the Brier and Manetti stocks and have failed with these need not be discouraged, as the way in which they grow and flower struck from cuttings is very different from the results obtainable from budded plants. Where frame room is not available they will succeed in the open ground, but, as a matter of course, will not commence to make either root or top-growth so early in the spring. Where put in the open ground as here described it will be well to prepare a slight frame 8 in. or 10 in. in depth with a few laths nailed across it that will bear a mat in very severe frost, which, with the addition of a little Fern, a few leaves, or litter, will keep them safe. This protection may not be required, but the late very mild winters which we have experienced I find are leading to a general laxity in making provision to resist the effects of severe and protracted ones, when the ground becomes congealed deeply, in which case the pressure from the frozen earth, when it undergoes expansion, crushes the bark of the established plants and still more rootless cuttings, and in this way effects their destruction to a far greater extent than occurs through the direct action of the low temperature upon them.

Tea Roses.—Even those who think they have already Roses sufficient would do well to annually raise some from cuttings, especially of the tender Tea varieties, as a hard winter frequently destroys a quantity of these, and through which the young plants might escape, and would be found very useful. Besides this in most gardens space can be found occupied by worthless, unattractive shrubs that might be replaced by Roses, than which there are few plants so acceptable. With the somewhat tender Tea varieties not near so much has been done to grow them successfully as might be. Over a considerable portion of the kingdom, where the soil is tolerably light and dry, by choosing the most suitable positions, Tea Roses on their own roots will be found to answer satisfactorily by simply giving them, through the winter months, the protection afforded by 6 in. of dry Furze (Gorse), Fern, litter, or some Oak or Beech leaves, with a little litter on the top to keep them from blowing about. After a severe protracted frost, wherein the tops are killed down to the protecting material, the collar and roots of the plants will be found uninjured, and will push up stout growth which will flower during the season—a very different condition from that in which the budded standard and half-standard plants of these tender varieties of Roses will be after a hard winter, when, except in the most favoured localities, probably not one in a dozen will be left alive. Established Tea and Noisette Roses, in most places where they succeed well, are this autumn more than usually furnished with quantities of newly-formed buds; the profusion of these so late is no doubt consequent upon the late spring. If the blooms arrive at maturity, they will come in at a time when more appreciable than at any other season of the year, through the scarcity of flowers. Their opening depends, in a great measure, not alone upon an absence of frost sufficient to kill them, but also upon dry weather, as, when much wet occurs, the outside petals rot. Where flowers from these late-blooming kinds are appreciated, the best plan that I have found is to plant a bed in a warm, sheltered position, and place over it some stout Hazel sticks, firmly inserted in the ground at each side, bent over, and tied in the middle so as to form an arch, on which throw a piece of canvas or some mats when there is an appearance of frost. The labour involved is very little as compared with the pleasure of having a handful of half-expanded buds to gather when required.—T. Baines.

Conservatories.—The absence of stove plants in these structures through removal to warmer quarters, on account of the lateness of the season, has divested them of their principal ornaments. Substitutes for them must be found in striking foliage and flowering plants of a more hardy character. Among the former the old Maranta zebrina still stands pre-eminent, and is one of the most useful decorative plants which it is possible to have for conservatory work at this season. Although fond of a little more warmth than is usually kept in such places at this time of year, it will stand very well for the next two months to come if the plants have not been recently subjected to strong heat, and are properly hardened off before being used. All that is necessary to insure their safety is to keep them somewhat drier at the root than they have been accustomed to while growing in a warmer temperature, and to set them in positions away from cold draughts or where air is admitted. A little ventilation will, however, now be required beyond what is just sufficient to keep young growths from damping off, or the thermometer from running unduly high should bright sunny days occur. At such times the ventilators should be closed early, so as to shut in a good amount of solar heat, and obviate the necessity of having to use fires to keep up a genial temperature. By so doing, such plants as Achimenes, Coleus, Balsams, and others may be rendered useful for some time longer, and even zonal Pelargoniums, Salvias, and most flowering plants of that class will be all the better for the extra warmth. In cases, however, where Camellias are planted out or occupy positions in the conservatory, the temperature must be kept as cool as possible, or they will most likely shed their buds. Although they will bear a great amount of heat when making their growth, they are particularly impatient of it at this season of the year, and nine-tenths of the failures that occur in the case of early Camellias are caused by attempts to force them, which they resent by casting their buds. The only way to get them to bloom in mid-winter is to start them early into growth, and keep them in moist heat till they set their flower buds. Thus treated they bloom naturally at a time of year when they are most valued, and last longest in perfection. The flower buds will now be showing themselves very prominently, and should at once be partially thinned by removing all the smallest and such as are badly situated for being seen when fully expanded. Where it is desired to keep plants to a limited size it is a good plan to take out the wood buds at the extreme points of all the strong shoots so as to induce the plants to break further back, which they would not do were these strong buds allowed to remain. By disbudding early, those in a dormant, undeveloped state lower down the shoot are forced to swell, and, as a result, start readily when the time comes for them to do so. It will now be necessary to admit all the light possible by reducing roof climbers to moderate limits, and which at no time should be allowed to get interlaced and entangled, whereby much of their natural grace and beauty is lost. As growth has now almost ceased in the case of most of these for this season, little water at the roots will now be requisite, for a moderately dry state of the border during winter will have a beneficial effect on the health of the plants. This applies more particularly to Passifloras, Tacsonias, Bignonias, and that class of summer-blooming plants, but Lapagerias will still require liberal supplies, as the flowers they bear in such abundance are now making active demands on the roots.

Chrysanthemums are generally late in setting their flowers this season. As soon as the buds are sufficiently large to handle, the whole of the plants should be gone over and thinned, reducing the number more in the large varieties than in the case of small-flowered kinds, as the latter can mature a proportionately greater quantity of blooms. In all cases it is better to thin out considerably more than is generally the practice; not only are the individual flowers finer when so treated, but they last much longer. From this time they should be fed with liquid manure alternately with clean water when they require moisture, and they will bear it as strong as any plant in existence. The majority of those who grow Chrysanthemums never obtain fine flowers, nor leaves that keep the dark green colour they are capable of assuming, simply because they do not give the plants sufficient liquid manures. If there is a deficiency of Chrysanthemums that have been grown in pots, any that were planted out in the spring may, now that the flowers are set, be lifted and placed in pots, abundance of water being given until they have taken hold of the new soil. The inexperienced may not, in the case of these plants, be able to understand the reason of advocating the use of so much water immediately after potting, which is quite contrary to the advice generally given in the management of most subjects when newly potted, viz., to withhold water as long as possible without allowing the soil to become over dry. The reason is, that they are remarkably vigorous and free-rooting, otherwise they could not bear to have their roots disturbed in the manner indicated; and, at the same time, they naturally require a great deal of water. If the majority of plants usually grown in pots were subjected to such usage, especially in the quantity of water given, they would assuredly die. This is simply a proof of the wholly different treatment required to ensure success in the cultivation ot pot plants.

Veronicas, such as Andersoni, salicifolia, and their numerous hybrids, are particularly adapted for those who have not had much experience in plant culture; they are easily propagated, easily-grown, and not impatient of a few degrees of cold or of extremes in the way of getting over-wet or a little too dry, such as would kill many plants. Their habit of flowering continuously through the autumn up to the end of the year in either a greenhouse or living room makes them additionally attractive at this season. Plants that were struck in spring and planted out-of-doors, as was then recommended, will by this time have made moderate-sized specimens, furnished with flower spikes at every joint from the points of the shoots for some distance downwards; they should at once be taken up and potted, lifting them with a fork, so as to preserve, if possible, all the roots intact; they will require pots from 8 in. to 12 in. in diameter, according to the variety grown and the size of the plants; give them more drainage than would be required for subjects that do not want so much water as these Veronicas; they will succeed in any ordinary, moderately light, porous soil. As soon as potted, give water enough to moisten the whole, as Veronicas are amongst the limited number of plants that must be watered immediately they are potted. If this be not done, the leaves will flag, an occurrence which would most likely have the effect of causing the unopened flowers to drop. If well attended to and kept in a frame, pit, or in a room, with the air a little confined for a week after they are potted, so as to give their roots a chance of beginning to act, they will continue blooming for many weeks. These and numbers of other plants that are handsome, free-flowering, and easily managed, are quite equal in every respect to many subjects that are much more difficult to grow.

Agapanthus umbellatus.—This, though old-fashioned, is an excellent plant; by some, however, it is held in little estimation, simply because it is easily managed. It will succeed in any kind of soil, and will bear neglect through inattention to watering better than most plants; it will also do with less pot-room than many plants. The excellent habit of its curved, drooping leaves, which, when well grown, almost cover the pots in which it is placed, constitute it one of the best for standing about door porches, on terraces, or by the side of walks, where the large umbels of blue flowers it forms are seen to advantage. They are likewise very useful for cutting, lasting well in that state, and affording a colour not over plentiful. It is also equally at home in the greenhouse. As soon as the flowering is over, when it is required to be increased, the plants should be turned out of the pots, the roots (which are usually very much interlaced) disentangled, and the crowns divided; if the roots be much matted they can be separated with the least injury by plunging the ball in a vessel of water and working the whole of the soil out with the fingers; a common edging iron will sever the crowns with as little damage to the roots as any implement that can be used. If two or more crowns be retained to each piece divided they may be put in 8-in. or 9-in. pots. Grow them in ordinary loam, to which add enough sand, and ram the soil firmly in the pots, which should be well drained, as they will do with less shifting than most plants.

Flower Garden.

Bedding Plants.—Such of these as are required to be taken up and potted must not be allowed to remain out so long as to suffer from frost, as, after they have been injured in that way, they will do little good. The tricolor Pelargoniums should be first secured; in taking them up, do not break any more roots than can be avoided, but do not attempt to lift them with balls; remove about one-half of the leaves, leaving such as are nearest the points of the shoots; let the soil be open, with a good proportion of sand in it; do not use pots larger than the roots can be got into by coiling them closely inside; make the soil quite firm, but give no water for a week or ten days. Gazanias, Lobelia speciosa, and any others that are required for stock should be also taken up and potted. Respecting this Lobelia it is not advisable to trust to seedlings, as these generally vary so much in both habit and colour as to make them much inferior to those propagated by cuttings from selected plants. Where an insufficiency of the earlier-struck cuttings of bedding Pelargoniums exists, more should at once be put in, although these cannot be expected to get so well established before winter as such as were rooted sooner; yet the harder condition of the shoots now will ensure their striking freely, provided they are fairly treated. Six or eight may be put in a 6-in. pot, removing all the leaves except two or three at the top; ram the soil quite hard in the pots, and do not give any water until it gets so dry as to absolutely require moisture; they will do well in a cold frame for a time with a little air during the day; the additional warmth which they will get here through sun-heat will accelerate the formation of roots. Rooted cuttings of all kinds of bedding plants will still be benefited by being fully exposed to the open air during the daytime, whenever the weather is favourable, but it will be advisable, in order to ensure their safety, to place lights over them at night, or, in some other way, to protect them from the effects of any unfavourable change which may suddenly take place in the weather.

Herbaceous Borders will still be gay with Asters and other late-flowering plants, and should be kept free from weeds or other littery matter, such as dead leaves or decaying flower stalks; annual plants should be cleared off as soon as their beauty is over, except in cases in which seeds are required.

Indoor Fruit Department.

Vines.—Those to be started into growth early in November must now be pruned. Except where young canes are being taken up, cut off all the wood of this season's growth, leaving only two buds on each spur. The operation of pruning should be effected with a sharp knife, and the wood should be cut nearly straight through. When all the canes are pruned remove the loose bark from the rods, but avoid scraping into the wood. Where mealy bug exists the cleaning must be performed with much care. This pest is always harboured underneath the loose bark, especially in the crevices about the spurs. When the bark is removed the whole Vine should be firmly scrubbed with a stiff brush and plenty of soft soap and lukewarm water. The brushing must be carefully accomplished about the eyes or they are liable to be rubbed off. The washing of the Vines completed, the glass and woodwork of the house should be scrubbed in the same way, and the whole should be finally drenched with clean water by means of the garden engine or hand syringe. When the Vines are dry, dress the wounds with Thomson's styptic, working it well into the pores with a small hard brush, and no bleeding will occur when the sap begins to rise. Remove all the loose surface soil down to the roots, and fill up to the required height with a mixture of loam, bones, and half-rotten cow manure. Do not leave a particle of the old soil in the house, as it generally contains the insects or their larvæ which have been cleaned from the Vines. After top-dressing, clean the pathways and the pipes, and give the border a thorough soaking with water, so as to moisten the entire body of soil, and render the roots fresh for starting into growth, keeping all the ventilators open day and night until forcing begins.

Pines.—Every favourable opportunity must be taken during this month to admit air to well-rooted suckers and other half-grown plants, so as to keep them dwarf and hardy for the winter. The bottom-heat for the earliest potted suckers need not exceed 70°, or 75° at the most after this time. The atmospheric temperature may range from 65° to 70° at night and 10° more throughout the hottest part of the day. Houses in which there are plants in fruit should be closed early in the afternoon, the fire being started in time to prevent the temperature falling below 70° at night.

Kitchen Garden.

Herbs.—If sufficient herbs were not cut for drying earlier in the season more should be secured before the approach of cold autumn weather; this more particularly refers to such subjects as Sage and Thyme. Lay them loosely where they will be fully exposed to light and air until quite dry. A quantity of Parsley should also now be gathered and similarly treated; it ought to be dried quickly or it will spoil. If it can be placed near a warm flue this will answer well. A good supply should always be thus provided, as, for many purposes, it can be used in place of fresh material in severe winters.

Tomatoes.—Any fruit of Tomatoes in the open air that has begun to colour should now be gathered and placed on a dry shelf near the glass in a greenhouse or similar situation, where it will be exposed to the full influence of the sun, and will soon ripen and be fit for use; the quality of Tomatoes is better when they are fully ripened on the plant; but after this time it is not safe to leave them out on account of danger from frost. The plants may be allowed to remain longer if they have yet a considerable quantity of growing fruit upon them; for, although they do not grow so fast after this time, yet, if the weather keeps fine, they will get to a useful size. A mat may be hung over them at night if danger from a low temperature is apprehended. When they have ceased to make further progress pull the plants up by the roots and hang them up, the heads downwards, in a greenhouse or empty Vinery, where the fruit will ripen. When so treated they should not be tied up in large bunches, or the leaves will turn damp and mouldy, which will prevent the fruit becoming fit for use.

Mushroom Beds.—Beds recently made should now be examined in order to ascertain whether or not they are fit for spawning. Manure for successional beds should be prepared, as, from this time to the end of the year, Mushrooms can be grown more successfully than at any other season, especially by those who may not have a regular house for them.

Extracts from my Diary.

October 7.—Sowing Canadian Wonder French Beans in pots for forcing, using good fibry loam and leaf-mould and rotted manure; also Mustard and Cress in heat. Potting herbaceous Calceolarias; also a small batch of late Cinerarias. Getting pits and frames ready for Endive and Lettuce. Renovating linings round pits and frames in which Cucumbers, Radishes, French Beans &c., are grown. Lifting Beetroot and storing it away in dry mould in an open shed. Looking over all Cauliflowers, and doubling down leaves, where heads are formed, to preserve them from frost, and removing all those fit for use to a cool shed, heeling them in in dry soil. Covering up Endive and Lettuce to blanch with inverted flower-pots. Gathering Easter Beurré, Josephine de Malines, and Winter Nelis Pears, and laying them singly on clean straw in fruit room. Watering the Pines all through, and tying up the fruit where required.

Oct. 8.—Potting Pelargoniums from flower borders; also a batch of Hyacinths, plunging the latter 2 in. or 3 in. deep in coal ashes in cold pits. Clearing off Cauliflower stumps and Peas which are done with, and preparing the ground for manuring and trenching. Transplanting a large border of Carter's Early Heartwell Marrow Cabbage. Turning a large heap of Mushroom manure. Moving Plum trees from nursery wall to other parts of garden where required to fill up vacancies. Planting Lettuce and Endive in pits and frames previously prepared by being filled with good soil.

Oct. 9.—Potting Lobelias and Tom Thumb and Flower of Spring Pelargoniums. Getting Chrysanthemums under cover. Weeding and thinning out autumn-sown Carrots. Hoeing amongst all the autumn-planted Cabbages. Gathering Blenheim Orange, Gooseberry Pippin, and Royal Somerset Apples.

Oct. 10.—Sowing Mustard and Cress in shallow boxes placed in heat for succession. Potting Centaureas and Carnations. Looking over Pelargonium cuttings, and removing all dead leaves and weeds. Earthing up late Celery when the soil is dry and in workable condition. Lifting Peach and Nectarine trees, and root-pruning them where required to check rank growth and bring them into a bearing condition. Clearing out all water-spouts and drains before the rainy season sets in. Gathering Beurré de Capiaumont, Beurré Clairgeau, and Duchess de Angoulême Pears. Clearing up leaves, and stacking them away for use hereafter.

Oct. 11.—Potting Pelargonium cuttings which have been struck in a frame. Planting a border of spring-flowering plants, consisting of Wallflowers, Silene pendula compacta, Forget-me-nots, Red and White Daisies, &c. Gathering all Scarlet Runners that are of usable size, and putting their stalks in water to keep them fresh until required for use. Earthing up Cardoons when the soil is dry and friable. Erecting staging over Strawberries in pots, on which to place spare lights to throw off heavy rains and protect the plants from frost. Clearing flower borders, and digging them. Top-dressing Cucumbers with chopped turf and rotted manure.

Oct. 12.—Roping Onions during wet weather; also looking over seed Potatoes, and placing them on their ends in shallow boxes to sprout. Cleaning paint in Vineries, &c., to destroy insects. Cutting shreds, pointing nails, making labels, pegs, &c., ready for use in dry weather. Fruit in use for dessert—Pines, Grapes, Pears, Plums, Apples, Nuts, &c.—W. G. P., *Dorset.*

New Potatoes in Autumn.—There is nothing new in having young Potatoes in autumn; but who cares to eat such watery tubers when all the finest kinds may be had ripe and mealy and of first-rate quality in every respect? Those, however, who desire such novelties may easily have them by retarding sets of any kind in a cool, dry, airy place till the end of June or July, and then planting them in any light, rich piece of ground exposed to the sun. It is a common practice with cottagers hereabouts to get two crops of Potatoes off the same piece of land by planting, after the first is dug, the second, which comes in for seed, as they sell the entire produce of the first as soon as they are large enough to be marketable. The sort treated in this way is Myatt's, the best of all Potatoes for early cropping, either out-of-doors or in frames, the old Ashleaf being too tender and uncertain to be relied on. An easy way, although a very old one, of getting young Potatoes during winter is to save sets of any large, strong-growing kind, and as the shoots form to rub them out till autumn or as long as they continue to appear, and then bury the tubers in dry sand or sifted soil where they will get a little warmth. After a few weeks they will emit young tubers around them, which if left will attain an ordinary size. These, it must be admitted, are not what any one would pronounce really good, but they come in by way of a surprise and take up very little room, time, or labour to grow them, and it is a way of utilising any spare sets or surplus stock that may be left over after the winter. This supertuberating of Potatoes has been a common affair of late, owing to the check received through dry weather when growing, and it often occurs in pits or where many are stored together and get a little warm.—S. D.

Tomatoes under Glass.—Indoors Tomatoes keep free from disease, and when grown in pots and trained in a light, airy position where a little artificial heat can be given after this period of the year, they are exceedingly prolific, and in this way may be had all the year round.—J. Groom.

ROSES.

ROSE GROWING IN FRANCE.

[The culture of the ever popular Rose is understood perhaps better in England than anywhere else, and the climate seems to aid the efforts of the cultivator with that amount of heat and moisture which produces the largest and finest blooms. But other nations also love the Rose, and its culture in France is both very ancient and very extensive. France makes the Rose a speciality in various districts, such as at Brie Comte Robert and Lyons, where it is grown on an extensive scale. Large numbers of our most beautiful Roses have been raised in France; it has, therefore, occurred to us that some of the Rose-lore of the country in which Maréchal Niel and La France were raised would be of some interest to English Rose growers, and for this reason we have translated some of the chapters of a French book on Roses, which will show the culture of the Rose from a point of view different from our own, and yet applicable to a country having almost the same climatal conditions.]

Soil for Roses.—The Rose tree adapts itself to every kind of soil; it does not, however, grow equally well in all. Heavy, clayey ground, with an impermeable sub-soil, is that which suits it least; the roots are too delicate to force their way through it, and they rot in the damp which they find beneath the surface. Light, calcareous, or siliceous soils, about 14 in. or 16 in. in depth, with a permeable sub-soil, are the most suitable, above all when they are stimulated with a little manure. We must not always judge of the suitability of the soil by the good condition of the plants growing upon it. In strong, rich lands the Rose tree may grow only too well; it may continue in leaf until very late in the season, in which case the young shoots will be exposed to the first frosts before they are perfectly matured. In a soil which is lighter and less rich the growth stops sooner, and the new shoots become properly ripened before they encounter the first cold. It may be remarked, also, that Roses grafted on the Brier are much stronger than those of the same varieties which have not been grafted.

Preparation of the Soil.—The ground intended for Rose growing ought to be dug to the depth of from 14 in. to 16 in. This part of the work ought, if possible, to be done in the autumn for spring planting. There is no need to enter into details with respect to this part of the work, as it is the same in the case of all kinds of plants. Great care, however, must be taken to clear the ground of all kinds of weeds and to extirpate the cockchafer grub. It is a good thing to stimulate the zeal of the labourers in their search after these pests to put a price on their heads. At Vitry, for digging the ground to the regulation depth of 14 in., the labourers are paid at the rate of about £4 16s. per acre, with an additional 10s. for the cockchafer grubs.

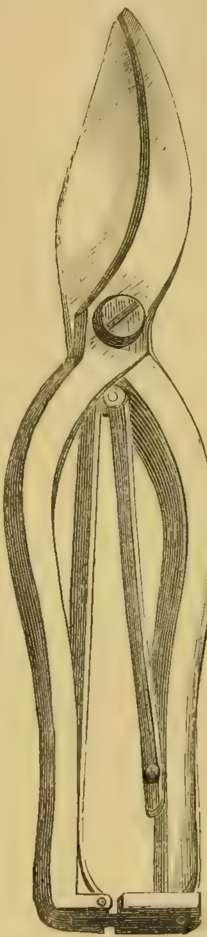


Fig. 1.—Sécateur.

Fig. 2.—Handsaw.

The Propagating House.—In the course of this article we shall frequently have to speak of the propagating house; we think it, therefore, just as well to describe thus early the plan upon which it should be constructed, so that it may give the best results. As the propagating house is not intended for show, its construction ought to be made subservient to proper conditions, that is to say, we must have as much light and heat as we require, and at the cheapest possible rate. The propagating house is a lean-to, and has but a single sloping roof, the slope being one in two. The principal is formed of a thick beam, which rests on an upright post, which again rests on a low wall, rising about 8 in. above the surface of the ground. The upright post has a piece cut out of its lower end, into which fits a light 4 ft. 8 in. in length. A second light of the same length is placed above the first, which it overlaps about $1\frac{1}{4}$ in., while a board of about 16 in. in breadth shuts all in snugly. The vertical portion between the supporting posts, which measures 1 ft. 8 in. wide in the inside, is fitted with a light which opens outwards. The width of the inside is 10 ft. 10 in., and is thus divided:—Against the lights is a frame 3 ft. 8 in. in width, and capable of holding three rows of bell-glasses. The inner wall which supports the frame is built of bricks 2 in. thick. The passage is 2 ft. 8 in. wide, and the other wall, which carries a second frame, 3 ft. 8 in. wide, is also 2 in. thick. The floor of the passage is 2 ft. below the level of the soil outside, the front frame being 2 ft. 8 in., and the back frame 3 ft. above the floor. The back wall which supports the roof rises more than 6 ft. above the back frame. There is, therefore, plenty of room for a couple of shelves. We shall not speak of artificial warming here, as everyone can choose the plan which he thinks the fittest to carry out his purpose. In many cases, however, there is no need for artificial heat; a heap of stable manure against the lower wall, a good supply of tan in the frames, and some thick straw mats being all that is necessary. The number of the frames will depend on the length of the house itself, which in this respect should be made large enough to satisfy every requirement. If a kind of inner porch can be built with a second door it will be found very convenient to work in, besides which the house will be all the warmer for the double doors. As the article proceeds we shall have frequent occasion to speak of bell-glasses for the cuttings. The following method of protecting them, which has been introduced for some time, is to be recommended: The bell-glasses are replaced by little boxes made of deal, the top being covered with a couple of sheets of glass, which may be removed at will. The front of these boxes measures 8 in. in height, the back 12 in.; as for their length and breadth, that is determined by the size of the sheets of glass at command. In this case the back and front of the boxes should be connected by two rods dovetailed in to support the glass. We merely indicate rather than describe the construction of these boxes, for everyone can make them in accordance with his own idea. We must recommend them for Rose growing, in preference to bell-glasses, for several reasons. They take up less room, the cuttings are closer to the glass, the heat is more fully concentrated, and they are worked much more easily. For instance, while the plants are being attended to the sheets of glass are placed upright against the wall of the passage between the frames, so that any dew which may have collected on them will run off of its own accord without any necessity for wiping them, as is done in the case of bell-glasses.

Tools for Pruning and Grafting Rose Trees.

The Sécateur (fig. 1) is a kind of shears with springs, consisting of a blade and a hook, which holds and steadies the branch while the blade cuts it. This tool is very destructive, for the pressure of the hook crushes the fibres of the bark, and sometimes those of the tender young wood, leaving a contused wound, which prevents the cut portion of the branch from becoming covered with fresh bark. To diminish the effects of this serious defect, the hook must always be placed under the branch to be cut, so that the principal effect of the pressure may be exercised on the upper portion, that is to say, on the part which is cut off. The sécateur, as shown in fig. 1, is 8 in. long. The blade forms part of the handle, as well as the hook. These parts ought to be too long rather than too short, and, above all, should be made of highly tempered steel.

The Hand-saw.—The hand-saw, as shown in fig. 2, is about 5 in. in length in the blade, and is provided with a wooden handle, into which it shuts. It is used for cutting off useless branches and dead wood. After the cut has been made it must be pared down with the pruning knife (fig. 3) and covered with grafting wax, so as to favour its recovery by keeping it out of contact with the air.

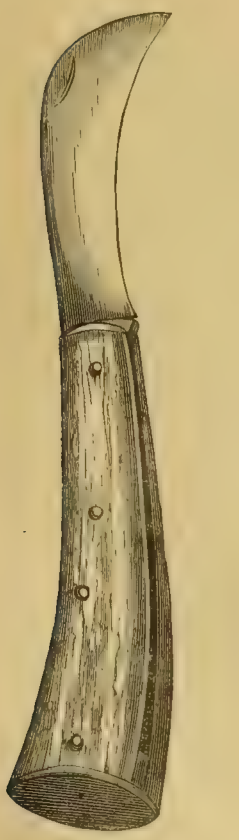


Fig. 3.—Pruning Knife.

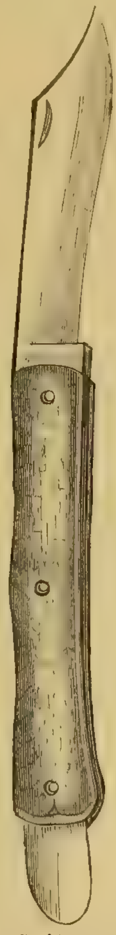


Fig. 4.—Grafting Knife.

Pruning Knife.—The pruning knife, shown in fig. 3, has a handle of buckhorn, about $3\frac{1}{2}$ in. long and $\frac{3}{4}$ in. in diameter at the base. It is provided with steel caps at each end, which greatly add to its solidity. The blade is made of cast steel, and is in the English form. It is $2\frac{3}{4}$ in. long and $\frac{1}{8}$ in. thick at the back. It generally costs from 3s. to 3s. 6d. There is another kind of pruning knife with a wooden handle, which is greatly used in France, which costs only from 1s. to 1s. 3d. when taken by the dozen. It forms a very useful tool when the blade has been made by a good cutler. One or other of these pruning knives is indispensable to the Rose grower.

Grafting Knife.—This implement varies greatly both in form and length. It may be provided with a movable or fixed spatula. In the grafting knife shown in fig. 4 the spatula is movable. The handle, which is of buck-horn, measures $4\frac{1}{2}$ in. in length, and 5-8ths of an inch broad. The blade is $3\frac{3}{4}$ in. long, and $\frac{1}{2}$ in. to 5-8ths of an inch in width at the narrowest and broadest parts respectively. The blade should be of fine steel, and should have a very keen edge. The spatula is 5-8ths of an inch in length by 2-5ths of an inch in width.

Labels.—It adds much to the enjoyment of Rose growing if every subject bears its proper name inscribed on a zinc or wood label. These labels may be easily cut from zinc clippings with a pair of shears. They are generally cut of the size and shape of a gentleman's visiting card with the corners cut off. A hole is pierced through them with a bradawl, so that they may be tied on the trees. They may be written on with the ink described below with a quill pen. Before writing on the zinc the surface must be thoroughly cleaned by washing in a solution of one part of common oil of vitriol to four parts of water. When dry, it must be sprinkled lightly with powdered gum sandarac to prevent the ink from running. As soon as the writing is dry it may be fixed by passing over it a soft brush dipped in white hard varnish. After this treatment the label will last for years, and may be washed as often as necessary.

Indelible Ink.—Powdered verdigris, $\frac{1}{4}$ oz.; sal ammoniac in powder, $\frac{1}{2}$ oz.; ivory or lampblack, 1 drachm; water, 8 oz. Blend the lampblack with a little water with the blade of a knife, then add it to the rest of the water, shaking the bottle until the whole is mixed. The verdigris and sal ammoniac are added next, and the whole is shaken until everything is dissolved. The bottle must be kept closely corked, and should be well shaken before the ink is used.

Wooden Labels.—These labels, although not so neat or so lasting as those made of zinc, are nevertheless greatly used where Roses are grown on a commercial scale. They are generally made of deal, and are 4 in. long, 5-8ths of an inch wide, and 1-8th of an inch thick. They are covered on one side with a layer of yellow ochre mixed with half its bulk of starch and enough water to make it into a thin cream. It may be applied with a brush or plug of tow. These labels may be written on with an ordinary pencil. At one end are two side cuts, through which passes the lead or zinc wire by which they are fixed to the tree. These labels can be made in France at 4s. per 1000, lead wire included.

Grafting Wax.—Yellow wax, 1 lb. 9 oz.; black pitch, 3 lb. 2 oz.; white pitch, 3 lb. 2 oz.; tallow, 5 oz. Place the whole in an earthen pipkin over a gentle fire, stirring it with a spatula as it melts, taking care to incorporate the ingredients thoroughly. This kind of grafting wax will remain solid at ordinary temperatures. In order to use it in the Rose garden we must provide ourselves with a charcoal or coke stove, or if only a small quantity is to be used a spirit lamp will serve the purpose, more especially when the spot is at a distance from the house.

Composition to be Used in the Cold for Grafting Roses and Covering Cut Surfaces.—Yellow wax, $12\frac{1}{2}$ oz.; black pitch, 1 lb. $2\frac{1}{2}$ oz.; white pitch, 1 lb. $2\frac{1}{2}$ oz.; linseed oil, 5 oz. Melt the whole together in an earthen pipkin over a gentle fire, and incorporate thoroughly with a wooden spatula. When mixed pour out on a flat piece of slate or porcelain moistened with water. Allow it to become cold enough to handle; and having first well moistened the hands mould it into rolls about $\frac{3}{4}$ in. thick, and 3 in. or 4 in. long. They should be wrapped up in oiled paper and kept in a cold place. For use, a small quantity of the wax is cut off and softened by the heat of the hands just before it is applied to the tree. This grafting wax contains no corrosive matter, adheres closely to the tree, and will keep good for several years.

Pans for Seedlings.—Fig. 5 represents the pan that is used for sowing. The dimensions vary from 6½ in. to 1 ft. in diameter, and from 4 in. to 6 in. in depth. These pans ought to be made of good porous clay, and should be pierced with holes at the bottom.

Drainage.—It is of the greatest importance that the water used for watering plants grown in pots should not remain in them, for if it does the roots will infallibly rot. Drainage, therefore, must be provided for by placing at the bottom of the pots some coarsely-broken material, such as pebbles, broken brick, &c., so as to prevent the hole in the bottom being filled up with the mould. In growing Roses we need only cover the hole over with a piece of broken flower-pot.

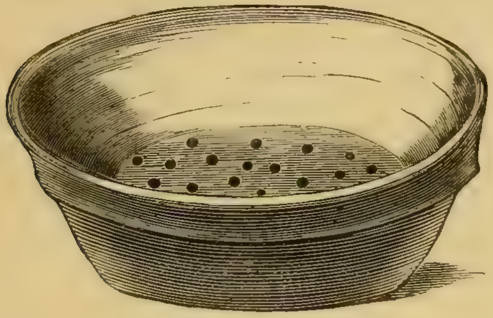


Fig. 5.—Pan for Seedlings.

Rhododendrons and Roses Mixed.—At Hutton Hall, Guisborough, what in the distance appeared to be a bed of Rhododendrons in flower at the end of August was in reality a bed of Rhododendrons with standard and half-standard Roses dotted amongst them. The heads of the Roses were just the height of the Rhododendrons, which, when looked at a little way off, seemed to be in flower. This is a mixture which might be extended to many places with great advantage.—D.

Pruning Marechal Niel Rose.—I agree with Mr. Hind's remarks (p. 284), with the exception of one or two points. I must consider the Brier to be the best stock for this Rose, both for open-air planting and under glass. I have long since abandoned its cultivation out-of-doors; and as to pruning, the plan pursued by us in common, I believe with many of the leading growers, is to cut back the laterals after blooming to a single eye.—Winchmore.

Rosa fulgens as a Standard.—I have not lately seen this in Rose catalogues, and cannot understand why it should have been discarded. Worked high, and trained over an umbrella trellis, it forms one of the finest summer ornaments of the flower garden. Being brilliant in colour, very free-flowering, sweet-scented, and so vigorous in growth, that when my last standard of it became superannuated, I had its remains handsomely carved, or rather turned, and converted into the tall stem of a candlestick table.—E. H.

Beauty of Glazenwood Rose.—Allow me to make a statement about a Rose which I see in catalogues under this name. Its history is as follows: In 1870 I saw it in bloom in a garden at Meran, in the Tyrol. I sent home two buds, one of which "took," and in 1871 the Rose bloomed on a south wall in the garden at Hedingham Castle, Essex. I showed it to Messrs. Paul, who told me that it appeared to be a beautiful variety of Fortune's Brier. I called the Rose Meran, and gave plants of it to my friends, by whom since 1871 it has been known as the Meran Rose. It is now, however, going the round of the Rose catalogues as a new Tea Rose. I am very glad that it is brought into notice, for it has great merit as a beautiful Brier Rose of remarkable colour and fragrance, but as it has no right to be named from Glazenwood, I will ask those who grow it to call it by its older and right name of Meran.—Severne Majendie, *Chaplain to the Duke of Buccleuch at Drumlanrig Castle.*

NOTES FROM RANGEMORE HALL.

(THE RESIDENCE OF M. T. BASS, ESQ., BURTON-ON-TRENT.)

Vines and Peaches Under Glass.—Some fourteen or fifteen houses are devoted to the cultivation of Grapes and Peaches, and everywhere marks of successful culture are represented. The two late Vineries—large span-roofed structures—are finishing off very fine crops of Muscats, Lady Downes, and Alicante Grapes. The Muscats especially were fine both in bunch and berry. Any young fruit grower whose lot is cast in a difficult situation might learn more than one useful lesson from Mr. Bennett's practice. The staple soil of the kitchen garden and neighbourhood is a poor, heavy, cold clay; even the top spit turf is of the same heavy, cold nature, and when its fibre decays it becomes too close and cold for healthy, active root action. Mr. Bennett meets and overcomes this difficulty by adopting Bacon's advice; and works in freely and often fresh turfy soil about the roots of his Vines and Peach trees. I believe a season never passes without some alteration or addition being made to some of the Vine borders. It involves a good deal of work, but the standard of excellence is maintained. Of course, in addition to this the houses are roomy, with a good length of rafter, and they possess all the latest improvements as to ventilating machinery. But, after all, healthy root action is the most important thing, and must be secured at any cost. Many of the Peach trees in both the early and late houses are trained horizontally, the main branches being about 6 in. apart. Mr. Bennett speaks highly of the plan, and the trees were remarkably healthy, and well and regularly furnished with branches. It is a simple plan enough when once the foundation of the tree is laid. The long main branches are furnished their whole length with young bearing shoots, which are annually replaced by others, in the same way as Vines are managed on the short rod system. It has a tendency to equalise the flow of the sap; and I think there is not the same danger of overcrowding the young wood and foliage as by the common method of fan training. The whole thing is plain and straightforward; any ordinary mind can soon acquire the details. You have a number of horizontal branches, say 8 ft. or 10 ft. long; along the upper sides of these branches are ranged a certain number of young bearing shoots, which, when the crop is gathered, will be cut out and replaced by others that have sprung from their base; and so on, year after year. Peaches out-of-doors do not bear well in Staffordshire, even when protected by wood copings and canvas blinds; but in a long Peach case, built on the model of the one at Keele Hall, some fine fruits when I was there were still ungathered.

Cordon Pears.—In front of the Peach case just alluded to is a long border, about 90 yds. or 100 yds. long, and 4 yds. or 5 yds. wide, planted with a collection of low cordon Pears. The border accommodates three rows of trees. They are trained over a flat table trellis about 15 in. or 16 in. from the ground. The two outside rows are planted near the edge of the border, 12 ft. apart each way, and three branches are taken from each tree at right angles. The centre row of trees is planted so as to range with the outside rows, thus—$\begin{smallmatrix} * & & * \\ & * & \\ * & & * \end{smallmatrix}$; four branches are taken from each tree. Altogether, the collection is an interesting one, and some of the trees are bearing good crops of fruit. I have no doubt, after a little experience of this kind of culture, when one had discovered the most prolific kinds to plant in each district, that a plantation of such trees would be profitable, as it would be a very easy matter to shelter them in cold seasons.

The Water Lily Pond.—This has been constructed artificially, mainly for the purpose of obtaining a supply of the beautiful flowers of the White Water Lily (Nymphæa alba) for indoor decoration. Cultivation improves this plant; for the flowers and foliage are never so fine in natural ponds as they are when proper preparation has been made for them. Water Lily culture is a simple matter; any one may have a Lily pond without incurring much expense. Dig a hole 4 ft. or so deep, as large as is necessary, and any shape required. Well puddle the bottom and sides with tempered clay; on the clay lay 18 in. in depth of turfy loam and manure, and in this plant the Lily roots. The depth of water when all is completed should be about 2 ft. A pipe should be laid to the pond from a good water supply, to keep the pond full in dry weather, and if it be too large for a plank to reach across, some resting place, not too conspicuous, should be fixed in the centre of the pond to give a bearing for one end of a plank, to enable a person to gather the flowers. A pond of this character would be an interesting feature in any garden, and might be placed in some retired spot.

Camellias and Roses.—The Camellia house is a large lofty structure with a ridge and furrow roof. The plants are in vigorous health, showing plenty of bloom buds. But I notice it principally to direct attention to the happy and useful effect produced by the Tea and Noisette Roses which are planted in borders round the walls, and which have covered the upright sides of the house and are rapidly extending under the roof, furnishing a light, grateful shade to the Camellias, and yielding at nearly all seasons an abundant supply of beautiful blossoms for cutting. The strong, vigorous growth of Maréchal Niel was especially noticeable. Flowers for cutting are in great demand, and amongst other subjects Allamanda Hendersoni and nobilis, trained on the roof of one of the stoves, are now a grand sight; I do not remember having seen before these plants so well flowered. Cissus discolor and C. porphyrophyllus, trained up the supporting columns in the same house and festooned about, are very effective; the latter kind is not nearly so much grown as it deserves to be. It is a vigorous grower with large, handsome, bronzy-looking foliage. A very good collection of Orchids is being got together. I noticed amongst others a fine plant of Phalænopsis Schilleriana showing two fine spikes, Saccolabium guttatum, several specimens finely in flower, and large numbers of those useful winter-flowering kinds Calanthe vestita and Veitchi, Cypripediums, Lælias, Dendrobiums, Cœlogynes, Odontoglossums, &c. Very large quantities of Ferns are grown for supplying fronds for cutting, and the old Maiden-hair (Adiantum cuneatum) remains here, as elsewhere, the favourite. The back and end walls of the Fernery are most effectively draped with a mixture of ornamental-leaved Begonias, Fittonias, and Gymnostachys. I have seen the same idea worked out in other places, but never better done than at Rangemore. A framework of galvanised wire netting is stretched over the face of the wall and about 3 in. from it. The cavity thus formed is filled full of turfy peat by pushing it through the meshes of the netting, and then small plants of the kinds named are inserted all over the surface. The effect in contrast with the green foliage of the Ferns is rich in the extreme. I got another useful idea for table decoration that may, perhaps, be new to some of your readers. Thin pieces and strips of deal board that will work into ornamental designs are covered 2 in. or so thick with peat; small bits of Lycopodium densum are dibbled in thickly, and soon form a dense mass, covering the wood effectually. At certain points the Lycopodium-covered peat is raised into low broad mounds which for the present contain small flower-pots to keep the sides up. When required for use, the flower-pots can be lifted out and the circular cavities which they occupied be filled with cut flowers, or some contrasting plant may be dropped in for a change.
E. Hobday.

SUGAR IN THE NECTAR OF FLOWERS.*

Nectar is the term applied by botanists to the sweet-tasted fluid which is secreted within the cups of insect-fertilised flowers, and the object gained to the plant by its presence is that insects, induced to visit flowers for its sake, are useful to the plants by effecting a cross-fertilisation. Mr. Darwin has shown what an amount of additional vigour is thus conferred on the seeds which subsequently result in contrast with the evil effects produced by continuous inbreeding. In many instances this sweet liquid is exuded from special glands, but in other cases from portions of the flower that do not seem to have been specially adapted for this purpose. Morphologically, nectaries may represent very different structures, but not unfrequently they are of the nature of an aborted organ—such as a petal or stamen. It is a point in dispute among biologists whether this saccharine matter is a true secretion or simply an excretion of effete matter from the vegetable cells, a by-product of the chemical changes taking place within these cells. The latter view seems to be favoured by the fact that a similar sweet-tasted fluid, much sought after by insects, is exuded on different parts of some plants quite unconnected with the flower, as in the Laurel, Brake, Fern, Lime tree, Acacia, &c. As to the use of such exudation of sweet fluid, various suggestions have been made by those who are disposed to regard it as a true secretion, as, for instance, that it serves as an attraction to certain insects to frequent the plant, these insects rendering service by keeping off animals to whose attacks the plant may be subject. Probably this is, to some extent, true, but it cannot be said to hold universally. Nectar is, of course, the source whence the bee derives honey, but it also affords food to many kinds of insects which do not possess the habit of storing up. A division of the humming birds is named Melliphagi on account of living on this substance; but it is probable that in some cases the small insects seeking the nectar, and not the nectar itself, may be the object of the visits of these birds to nectar-producing flowers. The bright colours, as shown by Sir John Lubbock's experiments, serve to guide insects to the flowers, and the odours which they emit fulfil the same end. The markings on a flower's petals, it is to be noted, always converge towards the nectar, as in the Violet. The importance of these guides to insects will be apparent from the following estimations, which show how indispensable it is that as little time as possible should be lost by an insect collecting honey. It must also be remembered that the nectar is usually contained in the most secure and best covered part of the flower, the object being to prevent the access of rain, which, owing to the extreme solubility and diffusibility of sugar, would speedily cause it to be transferred to parts of the plants where insects could reach it without being of any service in the way of cross-fertilisation. The chief purpose of the flower would in this way be frustrated. The formation of nectar is observed to take place most freely in hot weather, and to be prevented by cold or wet. So great economy is exercised by the plant that it is only formed at the time when insects' visits would be beneficial, *i.e.*, when the anthers are ripe and shedding their pollen, or when the stigma is mature and ready to receive pollen. By biologists the visits of bees, butterflies, and other insects are believed to have exercised in past time an important influence in modifying the size, shape, colour, &c., of flowers, and the following experiments, in spite of their incompleteness, are of interest, as showing to what an extent this action takes place in Nature, and as helping to determine the value of this factor. These estimations are only the first of a series, and the writer regrets that he has been unable to give them the desirable completeness, but hopes to continue them.

The nectar was extracted with water, and the sugar determined before and after inversion by means of Fehling's copper solution. Many of the estimations were done in duplicate, and gave results that agreed perfectly. In the case of Fuchsia—which is not deprived of its nectar by any insects in this country, the nectary being inaccessible to native species—we have probably the whole amount formed, but in other cases the visits of bees, &c., may have reduced the amounts considerably. In this case it is a clear, colourless liquid, having an acid reaction and intensely sweet taste; that of many others has the strong characteristic odour of honey:—

Sugar in Flowers.

	Total.	Fruit.	Cane? (as Fruit.)
	M.m.g.		
1. Fuchsia, per flower . .	7·59	1·69	5·9
2. Claytonia alsinoides, ditto .	0·413	0·175	0·238
3. Everlasting Pea, ditto . .	9·93	8·33	1·60
4. Vetch (Vicia cracca), per raceme	3·16	3·15	0·01
5. Ditto, per single flower .	0·158	0·158	—
6. Red Clover, per head . .	7·93	5·95	1·98
7. Ditto, per floret . . .	0·132	0·099	0·033
8. Monkshead, per flower .	6·41	4·63	1·78

Approximately, then, 100 heads of Clover yield 0·8 grm. sugar, or 125 give 1 grm., or 125,000 1 kilo. of sugar; and as each head contains about sixty florets (125,000 × 60), that is, 7,500,000 distinct flower-tubes must be sucked in order to obtain 1 kilo. of sugar. Now as honey, roughly, may be said to contain 75 per cent. of sugar, we have 1 kilo. grm. equivalent to 5,600,000 flowers in round numbers, or, say, 2,500,000 visits for 1 lb. of honey. This shows what an amazing amount of labour the bees must perform, for their industry would thus appear to be indispensable to their very existence. Another point worth notice in these results is the occurrence of what appears to be cane-sugar, and that in the case of Fuchsia in the proportion of nearly three-fourths of the whole. This is remarkable, as honey is usually supposed to contain no cane-sugar, its presence being usually regarded as certain evidence of adulteration. The question therefore arises whether this change which takes place while the sugar is in the possession of the bee, is due to the action of juices with which it comes in contact while in the honey-bag or expanded œsophagus of the insect, or whether the process of inversion goes on spontaneously, as may perhaps be the case.

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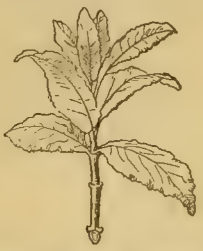
* Read before the Chemical Section of the British Association, Dublin, 1878, by Alex. S. Wilson, M.A., B.Sc., Fellow in Natural Science, Glasgow University.

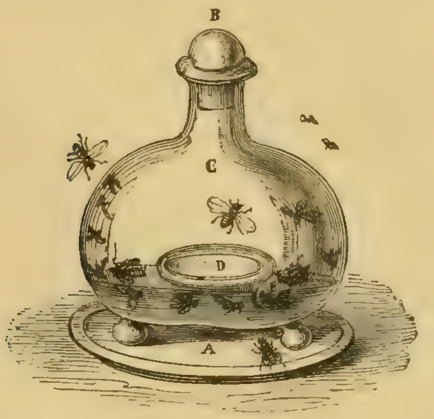
PROPAGATING.

Shrubby Calceolarias.—These are best increased in autumn. If strong plants are wanted for early planting out, take a 2-light or 3-light box, or more, according to the quantity required, and place it in some part of the garden; put at the bottom about 3½ in. of rough soil and then 3 in. of finer soil, with a little sand mixed with it on the top, and press down rather firmly and level; select the side shoots for cuttings, avoiding all that show any signs of flower buds, and make them as represented in the accompanying illustration; take a small dibber, or peg, and make the holes 3 in. apart, insert the cuttings and press them in firmly; then give a sprinkling of water, and shut up closely. As soon as they begin to show signs of growth, take the lights off for an hour every morning, and give a little air at the back during the daytime. They may be wintered in the same box in which they are struck, protected from frost, and potted up or replanted in February. For the spring propagation of new and scarce sorts, a close box or hand-glass may be put on a cold bottom in the propagating house. The plants should have 55° of heat to draw out the cuttings, which are best cut and put in in the same way as Verbenas; give air every morning, and a slight sprinkling overhead with water. As soon as they are rooted, gradually harden them off. H. H.



Cutting of Shrubby Calceolaria.

Wasp and Fly Trap.—The accompanying illustration represents an admirable fly and wasp catcher. I have tried it this summer with the greatest success both for flies and wasps, and by placing it over a wasp's nest in a few days I caught 1500. I also placed one in a Vinery, and hundreds of flies and wasps were caught by it. It differs but little from that published in The Garden (p. 259).—P. C. B.



Wasp and Fly Trap.

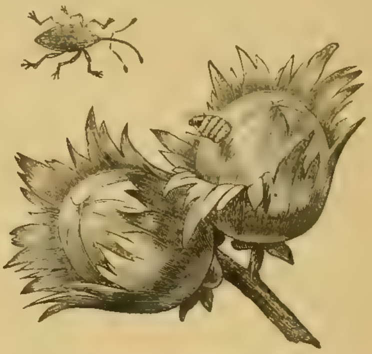
GARDEN DESTROYERS.

THE NUT WEEVIL.

(BALANINUS NUCUM.)

Almost every one who has gathered and eaten fresh nuts has found some that contain grubs or maggots. These grubs are the larvæ of the nut weevil, a very common insect and one that in some years destroys a great number of Filberts and other nuts. It is, however, a very difficult one to keep in check, for while in the egg and grub states it passes its existence within the nut, after which it buries itself in the ground and assumes the chrysalis state. The perfect insects are by no means conspicuous, and picking them off the nut bushes would hardly be worth the trouble. There is one way, however, by which their numbers may considerably be reduced. The nuts containing grubs generally fall to the ground before the others are quite ripe; these should be at once picked up and burnt or crushed; by this means many of the next generation will be destroyed. The nut weevil is ⅝ in. long and of a rich brown colour, thickly covered with very fine reddish-yellow velvety hairs. The head is produced in front into a very long slender nose or beak which is almost of the same length as its body. The antennæ are composed of several joints, that at the base being nearly as long as all the others together; they are set into the long joint at an angle, making quite an elbow. The antennæ are placed on either side of the beak about half-way between the eyes, which are quite towards the back of the head and the mouth which is at the extremity of the beak. The thorax or fore part of the body is coneshaped, the widest part being where the wing-cases join it; they are rather wider than the thorax, and taper to a point at the extreme end of the body, which they completely cover. The legs are short and strong. When the nuts are still young and soft, the female makes small, round holes in them with the help of her long beak, depositing an egg, which is dark brown, at the bottom of each when a hole is finished. She seems to take care only to bore one hole in each nut, and to avoid those which have already been bored by another weevil, as two grubs are never found in one nut. The grubs are hatched in a week or ten days, and at once begin to eat the kernel of the nut, avoiding, however, any vital part until they are nearly full grown. They are of a white colour, fat, fleshy, and legless, with large tubercules on their sides. They attain their full size in September or October, and then bore holes in the nut-shells, through which they make their exit and drop to the ground (unless the nut has already fallen) and work their way some distance below the surface, where they form a little cell, in which they remain in a torpid state during the winter and until May or June, when they change into the chrysalis state. In about a month or six weeks the perfect insect is developed and leaves the chrysalis case or skin; it does not, however, make its appearance above ground for another week. The amount of mischief one nut weevil may do is very considerable, for though it may not lay so many eggs as insects often do, they are laid in very secure places, and each grub that is hatched destroys a nut.

S. G. S.



The Nut Weevil (Balaninus nucum).

ANSWERS TO CORRESPONDENTS.

Propagating Briers.—I have found a beautiful variegated Brier. How can I propagate it? It is growing far from my house; therefore I cannot layer it. Will cuttings grow? If so, how are they to be treated?—M. D. [Cuttings of your variegated Brier will probably grow. They should be from 4 in. to 6 in. in length, taken off, if possible, with a heel, and planted in a north border to the depth of 3 in.—A. W. P.]

Cutting Down the Marechal Niel Rose.—I have got a Maréchal Niel Rose which has grown very tall and run very much to stalk. Will it be wise to cut it down to within about 3 ft. of the ground? It is at present about 12 ft. high, and somewhat straggling although very healthy. What time of the year should it be cut?—M. Q. [If the wood of your Maréchal Niel be well ripened I would cut it down to about 7 ft. from the ground, and either tie up the branches to a stake, to form a pillar Rose, or bend them over in a weeping form. If the wood be not well ripened, cut it down to the ripened point, not now but in April.—A. W. P.]

Maize as a Vegetable (p. 275).—The proper stage of growth at which the ears of Maize may be gathered for use in a green state is just as the milk commences to thicken in the seed. To gather the cobs younger than this is wasteful, and when allowed to get much older they get somewhat dry, and lose that pleasant sweetness so much prized in ears picked at the right moment. As to dressing, the general way is simply to unhusk it, clean all the "silk" from it, and to boil it for twenty minutes in clean water. It should be served hot and eaten off the cob with butter. Used thus, no vegetable is more delicious.—J. Knight, *Shinfield, Reading.*

Preserving Filberts.—How can I preserve Filberts and Walnuts until Christmas?—Z. P. A. [Place them when dry in dry sand or salt in stone jars, tied down with some impervious material, and bury them in the ground or place them in a cool cellar.]

Diseased Shallots.—If "E.'s" Shallots (p. 275) are merely shrivelling, the cause may be early pulling, but if, as I suspect, the bulbs are decaying at the base, it is probably due to a disease of a fungoid character, to which the Shallot is sometimes subject. The best remedy is to obtain a change of stock, and plant on fresh, well-worked land in some open, airy position. Dress the ground with soot and lime and a sprinkling of salt, and plant in February.—E. Hobday.

Spiced Rose Leaves.—The following receipt for spiced Rose leaves may perhaps be of use to your "Subscriber" (p. 165). This receipt is used in South Carolina, where there are so many sweet Roses. —M. S. A. [Gather the Roses while fresh (a dry day is best) and place them in a china jar with a cover. First let there be a layer of leaves, and then sprinkle them with powdered cloves, mace, nutmeg, &c., mixed with fine salt, in greater or less quantity, according to the moisture contained in the Rose leaves (less salt if the leaves be very moist), as the salt is intended to keep up the moisture, which will cause the spices to penetrate. Each day add a layer of leaves and spice mixed with salt. Examine the contents of the jar from time to time. If mouldy stir them up and let them dry a little; they will be more apt to mould if too many be done at once. By uncovering the jar the perfume in a room is very pleasant, and the Rose leaves will keep and be sweet for years.]

Trees Difficult to Move.—I am very doubtful if "Exempt" (p. 275) will succeed in transplanting an evergreen Oak so high and large as the one of which he speaks, as they are, of all shrubs and trees, the most difficult to deal with. This is owing to the very little fibre they make, sending out as they do long, clean roots that penetrate deep in the soil, and when these are severed, it is so long before others are formed that the plants perish from want of sap. Even small plants, such as are generally sent out from the nurseries, are always kept in pots plunged to render their removal a matter of safety and certainty, which shows what bad subjects they are to treat at that stage, unless their roots are confined. If I were desirous of transplanting a large specimen, I should open a wide trench around it, at about 4 ft. distant from the stem, and work well under the ball, cutting all roots that come in the way; in doing this, I should take care not to bruise or mutilate them in any way, but leave each clean and smooth at the end by trimming them up with a sharp knife. This done, the next proceeding would be to fill in the trench again with some leaf soil and sand added to that thrown out, so as to induce the formation of fresh feeders, to give time for which it will be necessary for the plant to stand for at least twelve months, when it should be lifted with as large a ball of earth as possible. The best time for this work is about the middle of April, as then they are just about forming their young growth, and a corresponding root action takes place at the same time, besides which, just at that season, genial showers and a soft balmy air usually prevail, and these are great aids in keeping the foliage fresh till the sap gets into proper circulation again. As evergreen Oaks bear cutting back well, I should advise the head being pruned in a bit, which, by lessening the amount of leafage, strikes a closer balance between the top and the bottom. A large area of foliage is so much more surface for evaporation, which goes on at a greater rate than most planters have any idea of, and it frequently occurs that losses of valuable plants are sustained through not reducing the branches. Much that has been said with regard to the evergreen Oak applies equally to the Hemlock Spruce, so far as the preparatory process for removal is concerned, but I have never looked on the Abies canadensis as a difficult tree to transplant, and I should have no hesitation in taking in hand one of the size your correspondent mentions. I should do this, however, at the time recommended for the Evergreen Oak, a season which, I am convinced from experience, is by far the safest and best for removing all evergreens, many of which, in some localities, are much cut about by the severe frosts and searching winds of winter, even when undisturbed, and how much less chance have they of withstanding the trying ordeal after being fresh transplanted? The principal thing to ensure success is to well wash in the soil among the roots as the filling in proceeds, and then to finish off with dry earth and a good thick mulching, by doing which there is no cracking of the earth, and loss of moisture by evaporation is reduced to a minimum. For trees and shrubs of large size a good drenching overhead, by means of a garden engine, for the first week or two after their removal is a fine thing for them, and does much towards giving them a start. Late at night is the best time to syringe them, as then it is not so quickly lost in the atmosphere.—S. D.

Cutting Down Evergreens.—I would be glad to know the proper time for cutting down Portugal Laurels which are growing too tall; also Laurustinus.—M. Q. [Cut them down in winter, say January or February.—S.]

Names of Fruits.—*M.*—101, Golden Pippin; 102, Yellow Ingestrie; 103, 104, Cockle Pippin; 106, Forelle or Trout Pear.

Names of Plants.—*Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible,* i.e., *both stem, leaves, and flowers, and fruit, when possible. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as Fuchsias or Pansies, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.*——*C. M. O.*—Begonia Evansiana (syn., discolor), Retinospora ericoides, Sedum carneum variegatum, and Fuchsia Dominiana. *X. C.*—5, Retinospora obtusa aurea; 6, Cupressus macrocarpa; 7, Pinus strobus; 8, Abies Douglasi. The rest hereafter (see notice). *O., Gorey.*—Aster dumosus, as far as we can judge from the specimen sent; Vallota purpurea; Sedum anglicum; some Diosma not in flower. *G. W.*—1, Buckwheat, excellent for pheasants; 2, apparently Hypericum oblongifolium. *J. H., Lewes.*—Not Genista triquetra, which has a more southern distribution, but G. sagittalis. *H.*—Bomarea Carderi. *Colonel P.*—Henbane, a Solanaceous plant.

Questions.

Winter-blooming Greenhouse Climber.—I intend cutting away some Vines which overrun the roof of a small lean-to greenhouse. What may I plant in the border which is outside to run up the roof in the place of the Vines? I shall be able to keep the house in winter up to 45° or 50°. Would any of the Passifloras or Tacsonias be suitable? in fact, any plant from which I could cut bloom in winter would be suitable. —J. W.

Woodsia alpina.—In the course of my rambles in Switzerland this summer I possessed myself of a good many plants of Woodsia alpina (or hyperborea), the management of which I hardly feel myself up to, taught, as I am, by former failures. I shall, therefore, be very grateful for hints from any who have succeeded in growing this interesting Fern either out-of-doors or in a cool conservatory. With two other valuable Ferns which I was fortunate enough to find in considerable abundance, Cystopteris montana and alpina, I expect no difficulty, from the sort of habitat in which they flourished.—Canonicus.

Forming Lawns.—Will some of the readers of The Garden kindly enlighten me as to the best mode of making a good lawn for lawn tennis by sowing seed, and the sort best adapted? We cannot get good turf here. There are a great many trees about my place, and the wet weather has made my lawn, which lies very low and flat, very like a swamp, and the Grass in some places is nearly all gone. The soil is gravel and sand, but doubtless it has never been properly drained. How should that be done?—Subscriber.

Propagating Clematises.—Can Clematises be increased by means of cuttings? and are they easily raised from seed?—I mean such kinds as C. lanuginosa or Jackmanni.—D. V.

Scottish Horticultural Association, Oct. 1.—Mr. Charles Taylor read a paper on this occasion on "Fern Spores," illustrating his remarks by diagrams. He described the views generally held on this subject, and, after tracing the development of spores, concluded by urging the members of the Association to give more attention to this question than they had hitherto done, as it opened up a large field for fresh and important inquiry. Mr. Andrew Kerr continued the subject by another paper, in which he gave his experience as regards the treatment and culture of Ferns. In the discussion which followed it was stated that Adiantum gracillimum was a sport from Adiantum cuneatum. This was borne out by the personal observation of several of the members present. A number of plants and flowers were exhibited.

Thomas Rowlands, foreman in Mr. Bass's garden at Rangemore, has been appointed gardener to Viscountess Downe, Baldersby Park, Yorkshire; and Mr. James Groom, late gardener at Henham Hall, has gone to Linton Park, Maidstone.

HYACINTHS IN POTS, BEDS, AND GLASSES.

Bulb catalogues, which are now making their appearance, remind one that the season for obtaining the supply of Hyacinths has again come round, and those who would desire to have these much-esteemed favourites in flower early should lose no time in sending their orders. It is generally supposed with these, as with most other things supplied by nurserymen, that those who come first are best served, which is not to wondered at, as otherwise the heaviest and most valuable bulbs might be left on hand, when they would, if sent out, have brought credit to those who supplied them, and have given increased satisfaction to the buyer. Whether or not first-comers have the preference, certain it is that to get Hyacinths in bloom by Christmas, or soon after, they must be potted or put into glasses at once; but, unless particularly required for that early season, it is best to wait a month or so later before starting them, as then they will come considerably stronger and finer. There is one kind, however, that is naturally of an early-flowering character, and well suited for forcing—the white Roman, so sweet and easily managed that no one should be without a few pots, to come in before the others; but, as these are considerably smaller, it is necessary to grow several together to produce much effect. A 6-in. pot is quite large enough to contain as many bulbs, and if these be placed at equal distances apart they form a good mass to stand in a vase in a room; or if for cutting, a quantity of bloom may thus be had in a small space. Single pips of these, mounted, answer admirably for bouquet making, and they are therefore valuable for that purpose, coming in as they do when other white flowers are scarce. The soil best suited to grow them in is a light fibry loam, made rich by the admixture of any kind of mild, thoroughly decomposed manure; and in placing the bulbs in this a pinch of sand should be put under the base of each, so as to prevent any contact between them and the soil, otherwise they are apt to rot at that particular part. The after treatment of these Roman Hyacinths, in preparing them for forcing, &c., does not differ materially from that requisite for the others; and, as these will be touched on in due order, that part of the subject may be passed over.

Those I have principally to deal with now are the Dutch, and in ordering these it is generally best to leave the selection of varieties to those supplying them, as it often occurs that the stock of some particular kind is scarce, and the bulbs inferior to others which are grown more largely, and from which selections of the best may therefore be made. It is not the largest bulbs, however, that are always the most preferable, as much depends on their weight and ripeness; besides which, they differ much in size according to the sorts, some being altogether closer and more compact than others that would readily take the eye of a purchaser. In regard to beauty and general symmetry of flowers, the single varieties are best, the double kinds frequently coming with crowded pips and deformed spikes, which is seldom the case with the former. The time for potting will in a great measure depend on the time they are required in bloom; but, as a rule, it is best to allow them to come slowly on instead of potting late, as then they often have to be hurried to make up for the delay. Those who have to keep up a prolonged display generally pot at intervals of a couple of months or so, beginning with the first as soon as the bulbs can be obtained, and continuing on as late as March or April; but it is a question if anything is gained by keeping them so long out of the soil, as they must perforce lose strength; whereas, if potted and kept cool, masses of roots would form to support the spike as soon as it emerges. For making a fine display there is nothing like growing three bulbs in a pot, a 7-in. size being quite large enough to contain sufficient rich soil to support that number. Those who have once had them in this way are not likely to be satisfied with single plants, as there is no comparison in the effect which they produce, and when grown three together they may be all of one colour, or arranged for contrast according to taste.

In draining the pots one crock is quite sufficient, and it is a good plan to scatter over this a little soot to exclude worms, which otherwise are apt to be a source of trouble. As to soil, nothing suits better than good friable loam, rotten cow manure, and leaf-mould—of the latter two, in the proportion of about one-fifth of the former—and this mixture should be used moderately dry, and pressed in the pots somewhat firmly, so that when finished the crown of the bulb shows just above the soil. The next thing is to place the pots level and give a gentle watering through a fine rose, and allow them to stand for a day to drain and dry a little before being covered up with half-rotten leaves, Cocoa-nut fibre, or anything of that kind, to exclude the light from them till they have formed roots and the tops begin to grow. As soon as this takes place, the covering must be gradually removed, so that the young blanched leaves do not suffer from sudden exposure; and when they will bear this, they cannot well be placed too close to the glass, or receive too much air whenever the weather is favourable. So treated, the spikes and foliage come sturdy and strong, and will then bear forcing without becoming unduly elongated, as they otherwise would be. Although Hyacinths will grow in bottles of water and require plenty of moisture, they will not succeed in a wet stagnant soil, and therefore, till the pots are well filled with roots and the plants are making active progress, watering should be done with care and judgment; but after they get fairly forward it is absorbed too quickly to do any harm.

Bulbs intended for glasses should be examined to see if they are sound at the base, and have any loose part removed, as when placed in water this is apt to lead to decay. Clear soft water is best for these, and this may be kept sweet by putting into it a few small pieces of charcoal, which is a powerful deodoriser, and highly congenial to the roots of all plants. The point with Hyacinths in glasses is to see that they are kept perfectly dark at starting, and have only just sufficient water to touch the bottom of the bulb, and to keep this replenished from time to time as occasion requires. A close cupboard answers admirably to place them in till they get a start, from whence they should be removed by degrees to the window, and set as close to the glass as possible, that they may have the full benefit of all the light which such a situation affords.

As regards those to be planted in beds, November is quite early enough for getting them in; but the thing now to be done is to prepare the soil by trenching it well up, that it may have time to subside and be ready when the right season arrives. If this be not done early, it settles irregularly after the bulbs are in, and in making the surface uniform some are buried much deeper than others, which retards their progress in the spring and makes their flowering later, thus giving the beds a somewhat gappy appearance, instead of having them in full beauty all at one time. In situations where the soil is naturally cold and wet, a little drainage is necessary, for which purpose nothing answers better than broken bricks, put in at a depth of from 18 in. to 24 in. or so. If on these some half-rotten manure be scattered, the interstices will be kept open for years, and the percolation of water be so regular that the bulbs will lie snug and safe for the winter, instead of rotting away, as they sometimes do when less favourably circumstanced. A handful of sharp sand put in around each when planting is a great help in warding off decay, as it prevents the soil from coming in immediate contact with them, and keeps them altogether in a more uniform condition as to moisture than they otherwise would be. In planting, the best effect is produced by having the rows about 9 in. or 10 in. apart, and the bulbs the same distance from each other in the rows, but placed quincunx fashion, so far at least as the shape of the bed will allow. The planting complete, the neatest way, and the best as regards the safety of the plants, is to finish off the surface with sifted leaf-soil, which is a capital non-conductor, as is also Cocoa-nut fibre, which may be used instead where the former is not readily attainable. Good Hyacinths for beds are now sold at a very cheap rate; and if taken care of, and allowed to stand and ripen off their foliage naturally after blooming, instead of being thrust aside, they will not deteriorate, but rather improve under good cultivation, and be available for the same purpose for an indefinite period.—"Field."

The Iron Tree (Parrotia persica).—This member of the Witch Hazel family is a native of Northern Persia and the Caucasus, and is one of the rarest trees in cultivation. Its beauty consists in the magnificent colouration of the foliage very late in autumn, when, except in unfavourable seasons, the leaves turn various bright colours, the principal being brilliant orange, golden-yellow, and scarlet. Sometimes, however, as is the case with many of the American trees which usually put on such lovely autumnal tints, they content themselves with dull yellow, purple, or brown. The small flowers are rendered conspicuous by their long, spreading stamens, with scarlet anthers. The leaves, about 3 in. long by 1½ in. or 2 in. broad, are coarsely-toothed, and when young are more or less clothed with silky hairs. The position which the tree likes best, and one which, on account of its rarity and beauty, it is well worth, is a wall with an eastern or western aspect. Here its foliage remains attached to the branches much longer than when in the open ground, and, moreover, under such conditions it grows more freely. It is called "Iron Tree by the Persians on account of its excessively hard wood. The genus, which only contains another species—a small Himalayan tree which has not yet found its way into cultivation—was named in honour of Prof. Parrot, who made the first ascent of Mount Ararat in 1829. From the "Botanical Magazine" we learn that the two specimens at Kew—one of which is trained against a wall, and the other planted on a lawn near the principal entrance—were received as pot plants from St. Petersburgh some thirty-five to forty years ago. In a wild state 10 ft. to 15 ft. are the heights attained; one of the Kew plants is about 10 ft. high. Layering would probably prove the easiest and most expeditious mode of propagating this very slow-growing tree.—N.

No. 360.] SATURDAY, OCTOBER 12, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

PICTURESQUE GROUPING OF TREES.

In the large and, in many respects, very fine English park at Munich we were lately very much struck with the naturally picturesque details of various groups of trees. Fine specimens often grew from almost the same root, or in any case from the same spot of earth, the result being frequently a wide divergence from the perpendicular in at least one individual of the group. This was a gain so far as beauty was concerned, though, no doubt, it would form a blemish in the eyes of planters generally. But this irregular natural and varied way is the right one, nevertheless, if the production of beautiful effects be the object. Timber is another question. Few, we hope, would attempt to form a picturesque group of trees by adopting in the beginning any kind of geometrical plan as to the spacing of the plants, but even those who would carefully avoid any such disposition would probably end by allowing each plant room for future development. We have ourselves, indeed, often recommended this, but now think otherwise. While generally it is well to allow each species room for full growth, it will in many cases be desirable to deviate from this rule for the sake of contrast as well as for that of the finer effects which may be thereby produced. Great size and dignity are all the more impressive if contrasted with evidences of the effects of the struggle for life, as shown in the distortion of some trees and even in the starvation of others. But as to "distortion" (or we, perhaps, had better say deviation from the perpendicular), many af the loveliest trees existing are of this character as regards the stem and main branches. The most beautiful forms assumed by the stems of trees will result from early attempts to grow towards the light from beneath the shade of some greater tree, or from the diverging growth assumed by two trees of nearly the same age and the same species growing very closely together. In pointing out the need for deviating from the usual prim and mathematical way of encouraging trees to grow, we are by no means insensible to the charms of perfectly-grown, clean timber, and can see beauty in a straight stem as well as in a crooked one. We, however, think that much beauty may be added to our ornamental planting by securing striking deviations from the usual form as regards the stem, and even deliberately overcrowding here and there. Abnormal growths such as those alluded to would, by contrast, relieve and heighten the fine size and symmetry to which we are now accustomed.

PLANTING FOREST TREES.

THOUGH, as a general rule, the principal aim of every planter on a large scale is profit, yet by a judicious selection and distribution of his trees he may at the same time afford the necessary shelter to the homestead, the pasture, and stock, as well as to his crops, and the ultimate benefits of such planting are nowhere more perceptible than in the woods themselves, where the vigorous growth of the trees in the interior often presents a striking contrast to the stunted and weather-beaten forms upon the windward margins of the plantations. Many attempts to clothe with wood the summits and sides of hills have failed, from the planter having been confined to the most exposed parts. In assigning his lower limits the proprietor has not unfrequently been guided more by his map and his rule and compasses than by considerations of soil and situation, and the adaptability of the land to the operations of the spade and mattock. By allowing the planter to obtain a footing upon the more fertile soil below, he would, by degrees, have been able to push upwards until he had reached the limits of profitable cultivation, and this in situations where the planting of the higher grounds first would have failed, for in most cases where a few inches of soil can be found a combination of planting and layering will enable him to grow remunerative coppicing even where standards of large size cannot be reared. Almost every selected site of any considerable extent will present great varieties of soil and surface, and it will be the duty of the planter so to distribute his species that each may occupy the spot best adapted to its habits and requirements. In order, too, that they may present no harsh outlines, the various kinds of trees in the same plantation should so gradually approach and intermix with each other as to make it appear that each species was gaining ground and taking possession of the soil.

As a barrier against the prevalent winds of the district, the Mountain Ash, Wych Elm, Sycamore, Beech, and Hornbeam may be planted; and to ensure a compact and dense front, a belt of Norway Spruce, which may afterwards be kept headed down to any required height, should be formed. In rearing plantations upon very exposed sites, an admixture of scrub or underwood with the standard trees is of the greatest importance. This checks evaporation, and at the same time fixes the fallen leaves, so that they decay *in situ* instead of drifting. Upon the higher ground and upon chalk ridges the Larch and Scotch Pine may be mixed with Birch and Beech. The Alder, also, though best adapted to moist and even wet situations, grows freely at a great height. The serrated outlines of spiral-topped trees, such as the Larch, are so harsh when they meet the horizon that these trees require to be planted in large masses. In mountain districts they harmonise with the peaks. The lower rocky slopes and the sides of dells are generally suitable for the Ash, the Silver and Spruce Firs, and various kinds of Pine; thin and sandy soils suit the Stone Pine, the Scotch Pine, and the Spanish Chestnut. Where rabbits abound, plant the Corsican Pine (Pinus Laricio), as they will seldom touch this while other food can be found. The plains and valleys with a moderately dry soil will be found well adapted to the Elm, Lime, Plane, Horse Chestnut, and Durmast Oak (Quercus sessiliflora), while moist situations suit the common British Oak (Q. pedunculata), the Spruce, Willow, Poplar, and Alder. To obtain the maximum of profit from his woods, the planter must exercise great judgment in selecting his trees and in preparing the land. A. J. BURROWS.

FUCHSIAS AMONGST IVY.

As the cultivation of the Fuchsia involves little or no trouble there is really no reason why sorts that are of robust habit, free blooming, and fairly hardy might not be found not only in ordinary shrubberies, but also under the shelter of trees in the wild garden. Fuchsias make in the open pleasure grounds grand summer beds, and permanent ones; but when the plants are cut down for the winter, and the stools sheltered, as is customary, with a heap of ashes, the effect is the reverse of pleasing; whilst the birds persistently refuse to allow the ashes to remain undisturbed. The obvious cure for this would be found in associating Ivy with the Fuchsia, *i.e.*, covering the surface of the bed with plants of Ivy, which would soon become permanently established, and which in winter would afford to the Fuchsia stools all the protection from frost that would probably be required. The danger, perhaps, would be that fast-growing Ivy might choke up the Fuchsia plants, but the stools might be cleared and freed from the too close embrace of the Ivy every spring, and even some well rotted manure might be dug in about the roots at the same time. The result of this arrangement would be that the plants would produce branches richly laden with flowers from a setting or groundwork of green Ivy, whilst in winter the beds would still be a mass of green leafage. Who can doubt that this would present a more charming spectacle than a mass of Cannas, Solanums, or even scarlet Pelargoniums? There are not wanting an abundance of Fuchsias suitable for outdoor planting that would give variety of growth and of colour, the most robust kinds, of course, having the central position. Double sorts should be avoided. Any plantsman would easily furnish a selection that would be most fitted from habit and strength for the purpose. Plants that had been once before cut back hard, and which had thrown up a bushy growth, would be better than single stem plants, as the latter do not break so freely in the open ground the first year. The cutting back should always be such as to encourage fresh growth from near the roots. A. D.

Conifers in Towns.—We often blame London so vigorously for causing the destruction of so many evergreen trees that, by comparison with it, one might suppose they would in other towns have a chance of succeeding. From what I have lately seen in various towns and cities happy enough to possess as pure an air as falls to the lot of any town, I should say that Conifers are not fitted for planting anywhere in cities, where they are exposed to street dust. It is most difficult to find them really growing well in any city, and, though there may be a few exceptions named, yet it will always be found that they grow in spots not liable to the objection spoken of, or to smoke.—H.

Cotoneasters in Masses.—Although Cotoneasters look well on walls or on pillars, there is no way in which they look so well as in masses on hilly or broken ground. In such situations, if planted so as to form irregular clumps, they are most effective at all seasons, whether in flower or fruit.—J. Groom.

Magnolia Lenne.—This fine variety seems to have a habit of flowering somewhat freely in the autumn; at least, my specimen, now a strong one, bore a good many flowers and buds at the end of September, the colour of the outside of the buds being very fine.—J. H.

Cercis japonica.—This species of Judas tree is remarkable for its large, leathery leaves, which might almost entitle it to the term "fine-foliaged." It seems a dwarfer kind than the others, but I only judge from young and cut-down specimens.—V.

Magnolia grandiflora.—Few plants are better adapted than this for clothing the principal columns of a mansion, which it will do to a height of 40 ft. It is one of the grandest subjects imaginable for such a position, in which it flowers freely. Perhaps the sunny situation, a full south exposure, and ample room for extension, increase its floriferous character, as on lower walls I never saw it flower so abundantly. Even now (October 7) there are many perfect flowers expanded on it.—J. Groom, *Linton.*

Pterocarya caucasica.—This handsome tree with its rich green and large compound leaves is a little more frequent in Continental gardens than in England. From its hardiness and great beauty of foliage it is, however, worth the attention of all who care for a distinct tree for the shrubbery or pleasure ground. It no more than any other tree can be expected to prosper if subjected to the muddling and crowding that so often passes muster as garden tree and shrub culture.—R.

Thujopsis dolabrata variegata.—We have in the Pinetum here a beautiful young specimen of this variegated form of Thujopsis, about 15 ft. high, the appearance of which fully bears out Mr. Syme's description of this variety (p. 282). My own experience of this Conifer is that it is somewhat slow in forming a good leader, and, consequently, wants a little attention in stopping shoots that are competing for that position, but that, when once fairly started, few trees maintain more symmetrical proportions. This may be said to be one of the numerous trees and shrubs that on their first introduction are rendered tender by being grown under glass, and when turned out in the open air suffer in consequence, and not from their natural inability to withstand the vicissitudes of our English climate.—J. Groom, *Linton.*

Grouping Shrubs in Woods.—We have often recommended this for the lawn or pleasure garden instead of the usual way of massing them in shrubberies. We have lately seen excellent effects from doing this on a larger scale in woods. For example, out from a stately wood (and yet near it, and part of it, so to say) were wide and irregular groups, mostly of one kind of deciduous shrub, which, thus thrown out from its usual position as undergrowth, could attain its full size and character. As the foliage died off, it assumed its bright hues in the sun—as several of the masses showed at the time of our seeing them. Numerous flowering shrubs offer themselves for this purpose, and of these and others, of course, many gentlemen would prefer the most useful for covert. Such groups would tend to modify agreeably the severity of the monotonous areas of Laurel and common Rhododendron in so many country places.

Rocks in Shrub Culture.—In carrying out a frequently repeated recommendation of The Garden, now often done, that the choicer and dwarfer shrubs be grown into fair specimens in the open sun on the Grass, I have made use of small groups and single small outcroppings of rock to assist in the work. Choice dwarf shrubs planted against or between these have obviously advantages in being partly protected from destruction through accidents, such as those of the mowing machine, or from being trodden on; they may also in many cases be a protection to the roots from drought. The association of choice mountain or Alpine shrubs with such rocks is also agreeable, and the effect is much better than that of the ordinary piled-up rock garden.—.V

BEST WAY OF WINTERING TUBERS AND BULBS.

The discussion as to the hardiness of Salvia patens and other tubers and bulbs when left in the ground through the winter is full of interest, especially to amateur gardeners. My object in writing is to ask for the experience of others, particularly in the culture of Gladioli. I am assured that it is unwise to risk the finer kinds in the ground during the winter for fear of frost. The only sorts of which I have had experience are G. Colvillei albus and roseus and a strong-growing scarlet and yellow variety, the name of which I do not know, and which has become without any care almost a weed in the garden. About five years ago I bought a pot of Colvillei albus, with, perhaps, three bulbs in it, from the late Mr. Wheeler, of Warminster. Since then the clump has been lifted only once, to remove it to another position, and each season it becomes stronger. This year I counted fourteen spikes open and opening at one time, and nothing could have been in greater perfection as regards beauty. Tigridias also, for several years past, have been left unmolested, and reward me throughout August and September with a daily and bundant supply of their splendid blossoms. Commelyna cœlestis takes care of itself in the same way. In a neighbouring garden Dahlias have been left alone for ten years past with the same good results.

On the other hand, my experience goes to prove that the storing of bulbs and tubers is full of risk. The difficulties seem to be threefold: 1. To choose the exact time to take them up when they are completely at rest and before new growth has commenced. In the case of bulbs, I believe this time to be an exceedingly short one. With tubers I greatly doubt whether, strictly speaking, there is such a period at all; and the most careful lifting is, besides, apt to cause more or less injury. Consequently, to take them up gives a serious shock to the root action, even though it may be partially suspended. 2. To regulate the hygrometric condition of the bulbs when stored so as to ensure their keeping plump and good, yet without danger of damping off. Shrivelled bulbs must surely have parted with some of their vitality, yet how difficult is it to attain to the proper degree of moisture at which to keep them. 3. Stored bulbs, being in a weakened and unnatural state, require, as a general rule, the stimulus of heat to start them early, otherwise, they do not complete their growth soon enough in our climate to bring their flowers to perfection. This tends to further enervation and the gradual decline too often of valuable plants. These theories, I must confess, do not altogether meet with approval amongst my gardening friends, who insist that Gladioli, at any rate, and Dahlias must be taken up or lost by frost. Would any successful growers of the more delicate kinds of these beautiful plants give their experience on this point? It is quite true that the late mild winters may have made us less cautious, but would not deep planting—say 6 in. below the surface—ensure safety? And may not the whole matter rest upon a question of soil? Given a light soil, well drained, and the bulbs may be allowed to take care of themselves, or require a mere covering of coal ashes to carry them through an ordinary winter; but a heavy, cold clay, retentive of wet, may plainly show the necessity of choosing the least of two evils and storing them. K. L. D.

Ashmore.

Wintering Pelargoniums.—As Pelargoniums still occupy a prominent place in the flower garden in summer, the question of how to store the requisite number during winter is an important one. There are still many who continue the old-fashioned custom of striking the cuttings in the open border, lifting them when well-rooted and potting them in single pots, a plan which answers well where labour is abundant and space equally so, but I find that putting the cuttings into boxes about 4 in. deep, 2 ft. long by 1 ft. 3 in. wide, being space enough for about seventy-five cuttings, reduces the space required for wintering such material considerably compared with what is possible when the plants are potted off singly. There is, however, no question as to each plant in a single pot being the best for producing good-shaped plants, but when the stock amounts to many thousands this cannot be done.—J. G.

Cypripedium insigne in a Cold Pit.—This is seldom so well grown as it ought to be. Most people keep it in an intermediate house or a stove, which is too warm for it. If cooler treatment were tried greater success would attend its cultivation. Mr. O'Brien, when at Bromley Hill, in Kent, used to grow it in a cold pit, and I do the same myself, and with good results. I place my plants in a frame under a north wall until they come into bloom, when I transfer them to a cold show house, and after blooming they are removed to the cold pit. Under this treatment, I have often from six to a dozen blooms on a plant in a 5-in. pot, which I find to be the most useful size for this Lady's-slipper. So hardy, indeed, is this Orchid, that I have on several occasions even had its foliage frozen without its sustaining any injury.—John Clews, *Kells, Co. Meath.*

NOTES OF THE WEEK.

A New Masdevallia.—Under the name of M. velifera, Mr. Bull has a plant in flower which is wholly distinct from any other variety yet in cultivation. Its blossoms are of large size, hood-shaped, and furnished with long tails. They are of a waxy substance and of a golden-yellow colour. Its chief value will probably consist in its being made available for crossing with some of the more showy kinds.

Vriesia brachystachys in Pans.—This showy stove plant is rendered much more attractive than it otherwise would be by being grown in the form of several plants together in pans. In this way we find it in Messrs. Veitch's nursery at Chelsea. Six or seven good plants are placed in a pan of convenient size, and each being now furnished with a strong spike of orange-scarlet blossoms, one of the most attractive features now to be found in the stove is the result. The longevity of the flowers, too, is very considerable, a point of some importance.

Meadow Saffrons.—The meadows of Germany and Switzerland, and, indeed, of the greater part of Central and Southern Europe, have lately been dotted with Colchicums, beautiful enough, but not so much so as the various double kinds now happily beginning to be looked up by various growers. We are often disposed to regret the multiplication of varieties and the preservation of double varieties of some flowers that are more beautiful in the single state, but there can be no doubt that the double Colchicums are a great gain in point of colour and endurance. Such new kinds, too, as Colchicum speciosum are most important gains, and it is to be hoped we shall one day see double varieties of this. These plants are most valuable for naturalisation in our cold, wet climate, where they grow so freely in any soil.—W. G.

Camellias and Euryas.—At this time of the year, when Camellias have just been placed in their winter quarters, and before they are well in bloom, they may be rendered more effective than they otherwise would be by having plants of Eurya latifolia variegata mixed with them. At Messrs. Veitch's nursery, Chelsea, where the Camellias are in better condition this year than we ever remember to have seen them, they are edged with dwarf plants of this Eurya with excellent effect. Many of the Camellias are already opening their blossoms, and the plants, both in pots and planted out, are literally studded with flower buds.

Scutellaria macrantha.—This showy hardy border plant is now flowering freely in Messrs. Veitch's nursery. It was figured many years ago in the "Botanical Magazine," but since then has received but little attention. Its free growth and bright blue flowers ought, however, to render it worthy of a place among the choicest of outdoor autumn-blooming plants. It is a native of Northern China.

Sarracenia Drummondi and alba.—Medium-sized plants of these Sarracenias, arranged in masses, are much more effective than large specimens; their trumpet-shaped, radicle leaves are of finer quality than those of large plants, and the two kinds combined make a very interesting group in the greenhouse. Masses of them may now be found in the principal London nurseries.

Pilea nana.—This is a compact-growing little plant, largely cultivated in the Pine-apple Nursery for furnishing material for indoor decoration. It is easier to grow than Club Mosses, it can be readily propagated, and will stand a fair share of rough usage. As a carpet plant in the conservatory, or for any purpose where a close-growing plant is required, this Pilea will be found useful.

A Prolific Bullace.—Mr. Harwood, of Colchester, grows a kind of Bullace which ought to be better known than it is. Its fruiting properties are remarkable, shoots 6 in. or a little more in length, being so crowded with fruit as to represent clusters of Black Grapes—indeed, a little way off to be undistinguishable from a bunch of Black Hamburgh with berries a little larger than usual. Being so fruitful the trees make little wood, and on that account seldom get beyond the size of small bushy pyramids. When fully ripe the fruit is of good flavour, and excellent for culinary purposes long after Damsons are over; indeed, Mr. Harwood states that it will hang on the trees till Christmas.

Roses on Grass.—We have lately seen carried out what has often been recommended in The Garden, the planting of Roses on the Grass, that is to say, Roses on their own roots planted in groups of a dozen or so in the Grass irregularly, so that one could walk between them and cut the flowers or otherwise attend to the plants. Of course the necessary good and deep soil may be given in this way as well as in a bed. When freshly planted the small circle of bare earth is sown with a Lobelia or some fragile annual. The effect is very good, inasmuch as the formality and bareness of the bed is got rid of, and those interested in the flowers can go more freely among them at all seasons. The preparation ought to be first-rate to begin with, as opportunities for refreshing the soil do not often occur.—H.

Dahlias on Grass.—In like manner we have recently been pleased to see in a German garden a group of tall Dahlias planted on the turf in an irregular group, each plant so far apart as allowed of easy movement on the Grass between them. They were as well grown as they could be in beds of the ordinary type, and we never saw Dahlias looking to better advantage.

Acacia dealbata.—I saw this Acacia (the White Wattle of Australia) the other day covered with recently-developed flower buds. The plant, which is thirty years old, was killed down to the ground in the winter of 1860-1, but is now vigorous and about 25 ft. in height —J. J. Rogers, *Penrose, Cornwall.*

Annual Balsams.—We notice two annual species of Balsam in the Munich garden which are worth a place in botanical collections —Impatiens scabrida (Walp.) and I. Roylei (Walp.), both tall and vigorous kinds, one with yellow and the other with lilac blooms.

The Red-berried Elder.—This showy species has lately, as usual, been very conspicuous on the Alps, and, indeed, in many hilly places throughout Central Europe. It is very brilliant and also graceful as regards the drooping of its coral-laden branches. Why is it not more grown?

Prizes for New Grapes.—At the meeting of the Committee of the Royal Horticultural Society on Tuesday next, the prizes offered by Messrs. Pearson, of Chilwell, for their new Grapes Mrs. Pearson and Golden Queen will be competed for. The latter Grape was figured in The Garden, Vol. XII., p. 600, and we have seen fine examples of it this season.

Giant Cockscombs.—Messrs. Carter & Co., of High Holborn' possess a strain of Cockscombs unequalled, as regards size, by any we have ever seen. The measurement of the comb of a specimen plant sent belonging to this strain is 3 ft. 2 in. lengthwise, and in the thickest part 1 ft. 4 in. across. The leaves are large and healthy, and the comb itself is of a rich velvety crimson, very double and highly ornamental. It is called the Empress Cockscomb.

Galatella cana.—I have always avoided the Galatellas as being somewhat too nearly allied to the Asters in all ways, and not quite so ornamental as the best Asters, but this autumn I have learnt to value highly Galatella cana, which has large, open, spreading heads of pretty lilac flowers, and which is of pleasing habit, and has silvery foliage.—H.

Canna iridiflora.—What a charming plant this (the true species) is. Among neglected ones few have such claims; such bold and graceful leaves that the plant would be well worth growing for their sakes, and such large, deep, rosy flowers that hang with a Fuchsia-like grace, but more stately. It blooms fairly enough in autumn out-of-doors in Paris gardens, and in those of Southern Germany, no doubt receiving the treatment usually given to "ornamental-leaved plants" in those places. It would, no doubt, also bloom well in our southern counties in favourable soils and positions, but the distinct charms of this plant make us ask, Why is it not grown, and well grown for the conservatory?—not always very full of beautiful fresh flowers and leaves in the autumn.

Cyclamens at Reading.—Messrs. Sutton have some beautiful varieties of the Persian Cyclamen now in flower, consisting of all colours, from pure white to rich crimson, the intermediate shades being delicate rose and purple. Though not what are termed Giant Cyclamens, the blooms are of large size and of great substance, and the petals, which are not too numerous, are well formed. They are growing in a house, the temperature of which is about 60°, a heat in which seed of the Cyclamen may be sown with advantage, and it may be added that this is the best time for sowing it.

Desmodium penduliflorum for the Conservatory.—There is no month of the year probably when the conservatory is so flowerless as in October, and therefore any good plant which can be grown and flowered easily at this time is acceptable. What are termed the summer-blooming plants are over, and Camellias, Azaleas, Chrysanthemums, and similar plants are not yet in flower, but Desmodium penduliflorum is now in full bloom. We saw plants of it in Mr. Bull's nursery, Chelsea, the other day furnished with long racemes of bright rosy-purple, Pea-shaped blossoms, which are remarkably attractive. The plant, of which a coloured plate appeared in The Garden, Vol. X., p. 216, is easily cultivated, graceful in habit, and flowers during the greater part of October and November. Either for the greenhouse, conservatory, or window, it is well worth culture.

NOTES FROM KEW.

Hardy Climbers.—Foremost in interest, as well as in beauty, amongst hardy climbers at present in flower is Smilax aspera, a native of the Mediterranean region. As a wall plant or as a screen to hide unsightly objects it is most effective, its shining dark green, heart-shaped leaves and wreaths of small, pale flowers—rendered somewhat conspicuous by their deep red ovaries—forming a very attractive combination. Aristolochia altissima is an uncommon and handsome plant. Like the last-named climber, it has glossy dark green, heart-shaped leaves, which are, however, more pointed and very wavy in the margins; the long-stalked flowers are much curved, about the size of those of A. Sipho, and reddish-brown and orange-yellow in colour. Clematis Viticella (the first of all the exotic kinds of Traveller's Joy to find its way into English gardens, where it has been known for upwards of three centuries) merits mention on account of the profusion in which its purple blossoms are produced at this season either on plants grown on stakes in the open air or on those trained to walls.

Hardy Shrubs.—Abelia rupestris is one of the most distinct and ornamental of the genus; its flowering season seems to extend over a much longer period than that of any of the other kinds. It is of neat habit and has pretty foliage and sweetly-scented blossoms, with a conspicuous reddish calyx and a white corolla, the outside, as well as the inner surface, of the tube being tinged with purplish.

Hardy Herbaceous Plants.—One of the most beautiful, as well as one of the rarest, plants we have had the pleasure of noting is Oxalis enneaphylla; it is of neat, dense habit and has tufts of very glaucous leaves and snowy white blossoms. From the letter-press accompanying the figure in a recent volume of the "Botanical Magazine" we learn that this charming little plant was brought from the Falkland Islands by the "Challenger." In the "Flora Antarctica" Sir J. D. Hooker describes it as the "Pride of the Falkland Islands," where it grows in such profusion on banks overhanging the sea, at Berkeley Sound, as to cover them with a mantle of snowy white in the spring month of November, adding that it is an excellent anti-scorbutic and an agreeable pot-herb. Like most plants from those dreary, inhospitable, almost sunless islands, it requires coolness and moisture to ensure success in its cultivation. Rudbeckia subtomentosa, a North American perennial, is one of the most desirable of a showy genus; it grows about 2 ft. high, has large flower-heads with bright golden yellow ray florets—those of the disk being purple—and possesses an additional qualification through being in full beauty when nearly all the other Rudbeckias are passing or are quite gone. Salvia farinacea, noted in these pages some time ago, is still in flower; as an autumn, as well as a summer-flowering plant, this fine Mexican sort is invaluable, the handsome deep blue and white blossoms being very conspicuous even at a considerable distance. Aster surculosus, 1 ft. in height, is a desirable sort with fine flower-heads of a lavender-blue colour. A. azureus grows about 3 ft. high and is a very floriferous kind with small blue flower-heads; it is of twiggy growth and a most distinct and useful kind. Heliomeris multiflora, 4 ft. high, has bright yellow flower-heads measuring 1 in. or 1½ in. across and looking like miniature Sunflowers. Boltonia latisquamma, a North American perennial about 5 ft. high, is very free-flowering, its blossoms being of a pleasing pale purplish-pink colour. B. decurrens, about 1 ft. higher than the last, has flowers of nearly the same shade. B. glastifolia is higher by 2 ft. than B. decurrens. Amongst the autumnal Crocuses the most noticeable are C. serotinus and C. Salzmanni, both with light blue flowers, the first being a native of Portugal, the other of Tangiers. C. Schimperi—or C. cancellatus, as it is sometimes called—is a lovely oriental kind with white blossoms. C. pulchellus, another oriental, and C. speciosus, from the Caucasus, are extremely fine; the first has handsome pale blue flowers, the other has beautifully striped blossoms somewhat darker in colour.

Greenhouse Plants.—Oxalis pentaphylla, a lovely species from the Cape of Good Hope, has long-stalked leaves (with five very narrow leaflets) and large blossoms of a beautiful pale rose colour, which are borne singly on long flower stalks. O. longisepala is of totally different habit, the small, hairy leaves being almost or quite sessile on the branches; the fine flowers are also borne singly on somewhat long stalks, and are a beautiful deep rosy-red. Gastronema sanguinea flammea is a very pretty South African bulb of easy cultivation, its large, orange-scarlet blossoms being freely produced, even from small bulbs in very small pots.

Stove Plants.—Æchmea fasciata, an interesting and beautiful Bromeliad, has dark green leaves—banded with interrupted lines of white—narrow, serrated, rose-coloured bracts and large flowers, white tipped with blue. Æschynanthus grandiflorus, an East Indian epiphyte of easy culture, has thick, fleshy, dark green leaves and large flowers clustered at the tips of the branches; the lower part of the corolla is orange-yellow, the upper orange-scarlet, with deeper coloured blotches.—†.

THE HOTTENTOT FIG.

(MESEMBRYANTHEMUM EDULE.)

I was surprised to observe in The Garden (p. 53) that this plant has proved hardy in England, as it cannot stand the winters here (Queenstown). I should mention that we are 3500 ft. above the sea level, and 150 miles from the coast; latitute 32°. We have occasional snowstorms in the winter and frequent frosts, the thermometer often marking from 4° to 6°, and occasionally from 8° to 10°. The lowest temperature recorded was four years ago, when 16° Fahr. were reached. I have several times tried to grow M. edule here, having brought up the plants from Bothus Hill, near Graham's Town, some 120 miles from here, which is the nearest point where they grow naturally, but I have always had them killed by frost; there is, however, a white variety (I think it is only a variety) which I got from the same place, and which is quite hardy here. The variety is more robust than the type, having stouter leaves and stalks and growing faster. I have it planted on a bank which it covers and forms a dense mass, and it is covered for at least half the year with large, yellowish-white flowers; but, strange to say, it has never yet perfected a fruit, though that is no great loss, as the fruit of this variety is insipid and slimy. In its native habitat M. edule grows along the coast, from where the salt spray reaches it to about thirty miles inland, thinly scattered in tufts over the country, usually in some sheltered spot—a knol—a bank—rocky places, or partly sheltered and protected by a Mimosa bush from the feet of the cattle, which, though they do not eat it, play havoc with its tender leaves when they walk on it; though occasionally it is found in dense patches on level, sandy ground, and the sides of deserts and little-used roads is a favourite place. The plant trails on the ground, rooting at the joints, and does not rise more than 1 ft. above the surface; the leaves are very succulent, triangular in shape, and of a bright, lively green colour. The juice of the leaves has a saline taste, and is said to possess considerable medicinal virtues. In spring the plants look very pretty, covered with their bright pink, starry flowers, followed by fruit, which is about the size and shape an elongated Medlar would be; it ripens in December, and when ripe is soft and of a brownish colour, full of small, dark brown seeds embedded in pulp. The flavour is exactly like that of a slightly over-ripe, somewhat dried Strawberry. The fruit is occasionally dried, but loses a good deal of its pleasant properties by that operation. It is known as the Hottentot Fig, or more commonly by the native name of Gocum (pronounced with a click between the first two letters), which is certainly easier than Mesembryanthemum pomeridianum, as I have seen it written. Henry Golding.

Queenstown, Cape of Good Hope.

Kniphofia foliosa.—This fine species, which possesses a beauty peculiar to itself, is a native of Abyssinia. It has been grown at the Berlin and Carlsruhe Botanic Garden, from roots sent by Schimper from Adoa. It will prove, I suppose, hardy in England, but I can say nothing yet about its hardiness in this country. It dies down entirely in winter, which is not the rule with other species. The leaves are from 2 ft. to 3 ft. long and ½ in. broad, and bright green. They grow in great profusion, not upright, but rather in a flattish tuft, gracefully drooping outwards. From amidst them rises the flower stem to about from 1½ ft. to 2 ft. high. The flower spike is about 3 in. or 4 in. long and 1½ in. through, and perfectly cylindrical. The individual flowers open first at the top of the spike. Their colour is a very beautiful glaucous, brick orange, very pleasing to the observer, and it is brightened by the protruding anthers, which are ornamented by deep yellow pollen. Taken all in all, it is a plant which attracts attention at once on account of its singular habit and beauty.—Max Leichtlin, *Baden-Baden.*

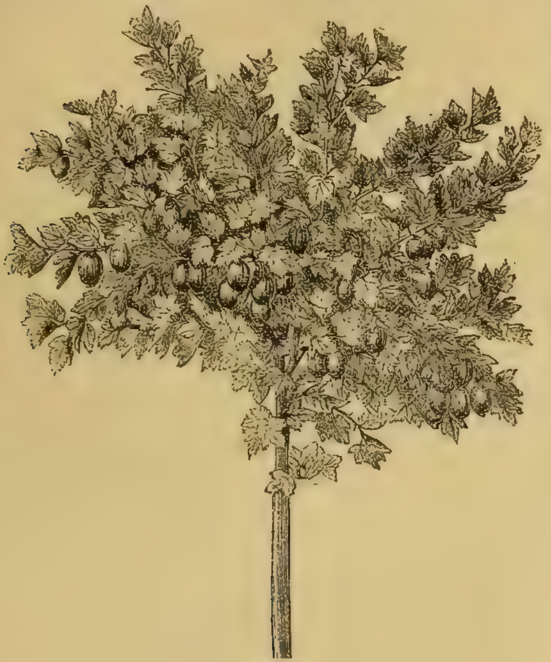
Zi-Goma.—The last issue of the "Revue Horticole" contains an important rectification concerning the above-named Japanese plant, described in Vol. XIII. of The Garden (p. 379), which M. Maëda, the Japanese Commissioner at the Paris Exhibition, pronounces to be Sessamum orientale, from the seeds of which the Japanese extract the oil with which they render waterproof their paper umbrellas. The Japanese name also turns out to be Ye, not Zi, Goma, or sometimes only Goma, simply without any prefix. The plant introduced by M. Léon de Lunaret, and distributed by him as Ye-Goma, turns out not to be this plant at all, but a member of the Perilla family most closely resembling P. ocymoides, which M. Maëda says is eaten as a salad by the Japanese, for which purpose, according to M. E. A. Carrière, the editor of the "Revue Horticole," its leaves can be but ill suited, from their hard, rough, and hairy texture.—W. E. G.

Saxifraga sancta.—This is a very neat and pretty little Saxifrage with yellow flowers which I may recommend to lovers of choice Alpine plants. It is a native of Mount Athos; hence its name, owing to the convent on that mountain.—J. H.

THE FRUIT GARDEN.

STANDARD CURRANTS AND GOOSEBERRIES.

Passing out of the rear entrance of Horticultural Hall at the Centennial Exhibition in Philadelphia in 1876, with a party of experienced horticulturists, on one of the hottest days of July, we came across a large clump or bed of Currants and Gooseberries in which the bushes presented a strange sight, the foliage and fruit being about on a level with the eye. Our friends were at first puzzled, but having heard of the plants through Dr. Chas. Siedhof, North Hoboken, N.J., we were on the outlook for them. It was a novelty to us to see Currants and Gooseberries, that we are usually obliged to look down at, growing where the fruit could be examined without stooping. This interesting exhibition came from Messrs. Kuhn & Co., Hoboken. Mr. Kuhn, in 1869, went to Germany to attend the widely known Pomological Institute of Dr. Edward Lucas, at Reutlingen, where, soon after his arrival, quantities of these standards were received from Austria. Knowing the interest which Dr. Siedhof took in such matters, Mr. Kuhn immediately wrote to him an account of these standard plants, which brought an order for a number of them. We mention this to show that they are no untried thing, but have been in cultivation in Dr. Siedhof's garden for seven years, and though he has increased his original six to fifty, those first planted are in full perfection and vigour. The stock used to graft upon is the Missouri Currant (Ribes aureum), well known in cultivation as an ornamental shrub with very fragrant yellow flowers. The stocks are usually propagated by what is known as stooling, or mound-layering, and are ready to be grafted when two years old; simple straight stems are used, or the stocks by proper pinching are made to produce several branches at the top, each of which may be grafted and form a large branching head sooner than when a simple graft is inserted. The stocks are taken up in autumn and potted, or wrapped in balls of Moss, and kept in a cold frame until they are brought into a cool house to be grafted. Here they are forced very gradually at a temperature of about 50°, and as soon as the stocks start well, the grafting is done; the grafts are inserted in the heavier stocks by ordinary cleft-grafting, but for others what is known as the American whip-graft—without cutting a tongue—is employed; the operation being finished by wrapping with waxed paper. All unripe, pithy stocks are rejected. The grafted stocks are kept rather dark until they start, they are then given full light, and when the shoots are 2 in. or 3 in. long, they are placed in a cooler house, where they are gradually hardened off. When spring opens they are planted out, or those in pots plunged in a somewhat shaded place, and by the autumn the plants are fit for sale. They usually bear the year of setting out, the second year of the graft, and increase in size and productiveness from year to year. The pruning consists mainly in thinning out the weaker branches and keeping the heads well open to light and air. The advantages claimed for this treatment of the Currant and Gooseberry are: 1. Great fruitfulness, the plants bearing enormous crops. 2. Great size and excellence of the fruit. 3. Freedom from the borer, which does not attack the Missouri Currant. 4. The ability to raise the fine large English varieties of the Gooseberry without mildew; Dr. Siedhof states that in seven years he has not had a single fruit mildew upon his standards, while plants near by, cultivated in the ordinary way, were badly affected by it. 5. Cleanliness of the fruit, and the ease with which it may be gathered. 6. The highly ornamental character of the trees, a matter of no little importance to those who pride themselves upon a neat and well kept garden. The longevity of the plants seems to be well established, they having been, as already stated, imported by Dr. Siedhof seven years ago, and Mr. Kuhn informs us that the oldest he knowns of, in Germany, are fourteen years old, and as healthy and as productive as ever. Messrs. Kuhn exhibited at a meeting of the Centennial Fruit Committee Gooseberries which measured 5½ in. by 3¾ in. in circumference, and weighing an ounce and a quarter and an ounce and a half each. We regard this treatment of the Currant and Gooseberry as one of the most interesting of recent horticultural developments, and are glad to find ourselves in this respect in accord with Mr. Chas. Downing, who says of the standards: "I have no hesitation in saying that they will become a valuable appendage to the garden for ornament as well as for general use, and are without doubt a novel and interesting addition to horticulture." Those who know the proverbial caution of Mr. Downing in all such matters will see that this is for him enthusiastic praise. The accompanying woodcut represents one of the bushes as shown at the Centennial, and has not by any means so large a head as older ones.—"American Agriculturist."



Standard Gooseberry.

FRUIT GROWING AT SAWBRIDGEWORTH.

The culture of miniature fruit trees has for many years been made a speciality in the nurseries of Mr. Rivers at Sawbridgeworth, and to this may also be added the culture of orchard-house trees in pots. Beginning with the Peach and Nectarine in orchard houses, it is here shown that in an unheated glass house, properly constructed and efficiently ventilated, well-established pyramid or standard trees in pots, or planted out permanently in the inside borders, are capable of giving a supply of excellent fruit from July to September, *i.e.*, provided kinds which ripen their fruit successionally be chosen for the purpose. A light, airy, span-roofed house 100 ft. long and 24 ft. wide, filled with established trees, some of which are twenty years of age, and which have been grown in the same sized pots, viz., about 22-in. ones, has yielded yearly large crops of fruit when outdoor trees on walls have been comparatively fruitless. No doubt in the culture of fruit trees in orchard houses much experience is necessary, in order to gain such results, and from the want of this, together with houses unsuitably constructed, many failures have occurred; but failures here are unknown, and the system adopted appears to be one easy of application. The trees, as before stated, are always kept in the same pots, and these constantly remain in the orchard house; the roots are not allowed to enter the border through the bottoms of the pots, but each year, when the trees are shedding their leaves, all the soil, which is full of fibrous roots, is dug out from the sides of the pots, by means of a small iron fork or the hand, to within a circle of 6 in. from the stem of the tree. The vacant space thus opened up is then filled with good maiden loam and rotten manure, and firmly rammed down. The removal of the roots in this way would to many probably appear to injure the tree, but such is not the case, inasmuch as when the leaves fall the roots are no longer needed; and if allowed to remain, and provided with more room in which to develop, they would emit rootlets which would cause the trees to make more wood the following year than would be desirable, a great part of which would not bear fruit. By adopting the system alluded to, however, the leaf buds are kept in check to a great extent; and, whilst the new soil affords food to assist the tree to carry the next year's crop, growth, in consequence of the very small roots which are emitted, is only made to such an extent as to provide fruiting wood for the following season. Pruning is little needed on this account, the removal of a superfluous twig or the shortening back of a strong growth being all that is necessary; and yet these trees are in the best of health, and at the time of our visit (the last week in September) several of them, consisting of late kinds, such as Comet and a new yellow-fleshed Peach named Golden Eagle were still laden with large and handsome fruit. The majority of the trees are from 8 ft. to 10 ft. in height and 4 ft. or 5 ft. through, and are placed at a sufficient distance apart to allow light, sunshine, and air free circulation round them. There are also in this house several old standard round-headed trees, which, on account of their being so close to the glass, necessitate their being cut hard back every year in order to keep them within bounds. Their heads measure from 6 ft. to 8 ft. through, and some of them this year have yielded upwards of fifteen dozen good fruits. Watering in winter is a very important matter; enough is given to keep the roots from shrivelling and no more, but when the trees are in full growth and bearing, copious supplies are necessary two or three times a week, and manure water is also applied freely. From this house this year have been gathered 4000 fruits, and this does not include a large quantity disposed of in other ways, of which no account was kept. Apricots are grown in much the same way as Peaches, but the top dressing does not take place till spring. Several large Mulberry trees, about sixteen years old, are also to be found in this house in pots. They are top-dressed yearly in the same way as the Peaches, and they yield a large quantity of fine fruit.

Pear trees are grown in pots, in the form of pyramids, with remarkably good results. They are lifted from the ground in autumn when two years old, potted into 10-in. pots, and then plunged up to their rims in slightly-raised beds of soil. Here they are allowed to remain until a year from the following spring, when they are coming into bloom; they are then moved into the orchard house and placed between the Peach trees close together until their fruit is fairly set, after which they are again taken outside and replunged. These are also top-dressed yearly, in the same way and at about the same time as the Peaches. Most of the Pear trees now in bearing are about 3 ft. in height and 2 ft. through, and well furnished with spurs, but there are no rank growths, and on some of these miniature trees may be counted nearly two dozen of fair-sized, well-developed fruits. Among the kinds which appeared to be bearing the best crops were Williams' Bon Chrétien, Duchesse d'Angoulême, Winter Nelis, Beurré d'Amanlis, Doyenné de Comice, Beurré Superfin, and Bergamot d'Esperen. Pear trees are also grown extensively out-of-doors on walls, and also in the form of cordons, espaliers, and pyramids with excellent results.

Among new Pears, of which there are a great number here, the best were named Fertility and Autocrat. The former receives its name on account of its fruitfulness. It is a medium-sized fruit of good shape and appearance, and of excellent flavour. It is ripe in September and October, and during the past five years this kind has always borne an abundant crop, and this in seasons when other kinds have been almost fruitless. It will, no doubt, when well known, be largely grown for market, for which purpose it appears to be well adapted also for planting in small gardens. Trees of it here are grown in the shape of tall columns, and in this way they can be planted close together, and a large amount of fruit can thus be obtained from a very limited space. Autocrat is a Pear almost as large as Pitmaston Duchess, figured in The Garden (Vol. XI., p. 234). It ripens in October and November, and is almost equal in flavour to Marie Louise, which, in various ways, it somewhat resembles.

Plums are also grown successfully in pots, in which they are treated in the same way as Pears. Vertical, five-shoot cordons out-of-doors also do remarkably well. They are trained up light wire trellises, also up narrow walls, positions in which they bear wonderful crops. As single stem cordons Plums grow too rapidly, and make growth at the expense of fruit; they are, therefore, only grown in this way in limited numbers. Among the kinds most noticeable for their free-bearing qualities in autumn may be named Belle de Septembre, Bouquet de Evegne, Autumn Compôte, Wyedale, a very fruitful black Plum, Pond's Seedling, Jefferson, Late Grand Duke.

Apples have done remarkably well this year on upright cordons. They are trained on light wire trellises to a height of about 6 ft. In this way they have a light and elegant appearance, and succeed infinitely better than the old horizontally-trained trees. As single shoot cordons Apple trees do well on the Paradise stock, but on the Crab stock they grow too vigorously to be fruitful. Among the sorts of Apples best adapted for growing as vertical or horizontal cordons, and which, this year, are bearing heavy crops of fine fruit are Small's Admirable, Cox's Pomona, Mannington Pearmain, Wadhurst Pippin, Lord Burghley, Lord Clyde, Sykehouse Russet, Betty Geeson, Blenheim Orange, King of the Pippins, Pine Golden Pippin, Cox's Orange Pippin, Melon, and American Mother. The Bijou Apple, from the South of France, is a kind grown here, both planted out and in pots. It is a small finely-shaped fruit of a deep crimson colour, and very handsome on the dessert table.

Oranges receive considerable attention here; they are not grown, as is often the case, just for the sake of having Orange trees or Orange flowers, but they are cultivated expressly for the fruit which they produce. The plants to be found here consist of round-headed standards, from 3 ft. to 5 ft. high, with clean stems. In some cases plants with only small heads bear a dozen good fruits, which will ripen in winter. If required entirely for ornament, such fruit could of course be left on the plants, where it would hang for at least twelve months, and thus one could have ripe fruit, green fruit, and bloom all at the same time. Orange trees require more heat and more careful treatment than they generally receive in order to induce them to yield good results. Here young plants grafted on the common Lemon stock are brought into a good fruiting condition in two years from the time of grafting, and sometimes even in one year, whereas in private gardens it is common to find large specimens of great age which seldom yield anything but a few flowers. During the summer months it is usual to place large Orange trees growing in pots and tubs on terrace walks and in similar positions. This is an operation which may be carried out without much injury to the plants, provided they are not placed in such positions until the middle of June, and are taken indoors again early in September, and afterwards placed in a light, airy house, the temperature of which ranges about 50° during winter and spring, instead of being crammed into an outhouse, shed, or unheated corridor, to lose their leaves and get covered with filth and insects, as is too often the case. Few plants are more ornamental than well-shaped Orange bushes laden with fruit and blossoms, and they would no doubt be more largely grown than they are at present if the conditions of their successful culture were better understood. The best soil for Oranges is that composed of two parts good turfy loam and equal parts well-decomposed manure or leaf mould, to which may be added a little road sand. Some cultivators strongly recommend turfy loam and fresh horse manure. The soil should be made firm in the pots or tubs, good drainage should be provided, and potting of established plants will only require to be done once in five or six years. Light, air, sun, and heat are highly necessary for the perfect growth of the Orange, although established plants will exist for years under very rough treatment. The best kinds grown for dessert at Sawbridgeworth are the small-leaved Tangierine, large oval Maltese Blood, and St. Michael's. Pruning is usually performed in summer by pinching back vigorous shoots, and in winter by thinning out a little of the unfruitful wood where too much crowded. The Orange is liable to a kind of black fungus, which infests its leaves and gives them a very unhealthy appearance, but this can easily be removed by sponging with warm water and soap, and, indeed, it seldom occurs on well-cultivated plants. Green fly is destroyed by Quassia chips boiled in water for a quarter of an hour, at the rate of 4 oz. of chips to the gallon. The shoots may be dipped in the water when cool, or they may be syringed with it. Scale may be prevented by syringing frequently with Quassia water; and it may be effectually destroyed by methylated spirits of wine applied to the shoots with a brush.

Pot Vines are grown in a very simple manner here. The pots, which are only of sufficient size to hold about a shovelful of soil, are placed on the hot-water pipes surrounding a span-roofed house. A few pieces of slate are inserted in the soil round the edges of the pot, in order to admit a top-dressing of rich compost being added at a time when the Grapes are so far advanced as to most require assistance, namely, when they have completed their stoning. On Vines thus treated may be found at the present time from eight to ten good bunches of Grapes, not over large, but well coloured, and fit for any table. After being once fruited, the Vines are, of course, thrown away. This shows how easy it is for any one having only a limited amount of glass to obtain a good supply of Grapes without having permanent Vines. A long, lean-to house of medium width planted with mixed Vines is well worthy of notice on account of the heavy crop of Grapes contained therein. The Vines, which are growing in the natural soil, have been planted about four years; their canes are remarkably stout, and each bears about twenty large, shapely bunches of perfectly-finished Grapes. Gros Morocco appears to do well in this house. It is a noble-looking black Grape of good flavour. Pearson's Golden Queen is also good.

Lovers of fruit and fruit trees will find a visit to Sawbridgeworth at all times interesting, but especially so early in autumn, when the trees are in full bearing. C. W. S.

NEW WAY OF TRAINING PYRAMID FRUIT TREES.

I saw near Paris, not long ago, a way of growing fruit trees against walls that rather struck me. It was a wall of Pear trees which had apparently been planted as cordons, but which had developed into one-sided pyramids, or something like it, the trees being broad and bushy at the base, sloping to a point about the top of the wall. It occurred to me that the plan might be very well adopted in this country by those who have not much time to train their trees in the usual way. What, for example, is to hinder any one from planting his pyramids, big or little, close up to the wall on one side? Of course he would have to cut away some of the stiffest back branches, and squeeze the trees up to the wall. They would then receive the benefit of the wall nearly as much as if they were trained close to it; and, except in keeping the leading shoot only tacked to the wall, they would need no nailing or training whatever, which is an important consideration, as in gardens of any extent the nailing and training of the trees is one of the most expensive as well as one of the coldest operations that have to be performed. I am acquainted with gardens where such work costs annually more than the value the fruit comes to, and I am afraid the same applies to not a few private gardens. The time will probably come by-and-by when fruit culture in this country will be confined to glass structures, except in the case of small fruits, and the market will supply our dessert Apples and Pears, &c., as it does now to a large extent. It is interesting to see a garden of finely trained fruit trees; but if they scarcely ever pay for the cost of labour in keeping them, they are hardly worth a place. At all events, any system which cheapens their culture and renders it more easy is worth trying, and I recommend the above plan to the attention of your readers. I remember a similar kind of proposal being made a number of years ago by a cultivator who had not time to train his trees in the orthodox fashion, particularly his Morello Cherries, which require more attention perhaps than any other tree in the garden, though the cook and confectioner in any large establishment do not, as a rule, use above a few pounds' worth during the season. This practitioner's plan was to allow his trees to grow out from the wall without any training whatever, except perhaps an occasional thinning of the branches, and it succeeded perfectly, as one can understand; for the more a Morello Cherry is allowed to grow, the better it bears, provided the branches are not too crowded. The object of training this Cherry on north walls is, of course, to have the fruit as late as possible; but it seems to me that the same end could be perfectly well accomplished by planting, say, 5 ft. standards close to the wall, and allowing them to grow naturally. The wall would shade them just the same, and they could be netted just as usual, while the labour of tying in a profusion of small shoots during the summer, and again in winter, would be entirely obviated. How far the same mode of culture might be applied to other wall fruits I will not say; but the question is worth considering. I submit that garden walls fringed round with fruit trees in the manner I have described would look as well as if they were covered with trees trained in the usual way. S. W.

PEACHES AND NECTARINES AT WELBECK.

Mr. Tillery having had on the glass-covered wall at Welbeck a more than usually good crop of Peaches and Nectarines this year, I venture to furnish some account of them. No one ever saw such a display of these two kinds of fruit as was to be seen here some two months ago, and now the last of them, the Salwey, is just being gathered—fine fruit, each measuring some 10 in. in circumference, while Lord Palmerston, Princess of Wales, Desse Tardive, Late Admirable, Barrington, and Walburton Admirable were equally large and fine. There are altogether fifty-seven Peach and Nectarine trees growing in this glass case, and every tree this year produced from ten to twelve dozen fruit. The following is a list of the Peaches, according to their season of ripening, viz.: early sorts—Beatrice and Early Louise; the Early Rivers Mr. Tillery has discarded, as it generally splits at the stalk, and is then badly-flavoured; other early kinds are Hales' Early, Early York, and Early Grosse Mignonne. Mid-season sorts consist of Dagmar, Dr. Hogg, Royal George, Noblesse, Alexandra Noblesse, and the Malta, the latter a delicious small Peach of the Noblesse section. Amongst late varieties were Exquisite (a yellow-fleshed Peach of good flavour), Galande, Comet, Princess of Wales, Late Admirable, Golden Eagle, Lord Palmerston, Barrington, Desse Tardive, and the Salwey. Nectarines, according to their season of ripening, consisted of Hunt's Tawny, Lord Napier, Elruge, Violette Hâtive, Pitmaston Orange, Rivers' Orange, Pine-apple, Albert Victor, and the Victoria, the latest and finest of all. The soil in which these Peaches and Nectarines are grown was principally taken from the top of a magnesian limestone rock in the neighbourhood, and it seems to suit the trees, for they always show fine, healthy, well-ripened wood, and are generally free from mildew. No manure of any kind was added to it when the borders were made, but liquid manure from the farmyard, with a little salt in it, is given during the growing season. One great help to these trees in always securing a full crop is that a little artificial heat can be given to the atmosphere of the case when the trees are in flower in frosty springs, and in autumn it can be applied to ripen the wood. J. M. H.

POT STRAWBERRIES WITHOUT LIQUID MANURE.

Perhaps no fruit-bearing plant is more frequently fed with liquid manure than the Strawberry when grown in pots. It is a general practice with all Strawberry growers, and is recommended by all, both when the plants are growing and when they are fruiting, and my own practice up till within a number of years back was no exception to the rule; but the danger of using such manures in the hands of inexperienced assistants, and more particularly the injury done by the drip and spilling of the liquid upon the leaves and fruit in houses, where the plants were necessarily arranged on shelves near the glass and above one another, not to speak of the offensive smell produced in the house, led me to think of discontinuing the practice and employing a more convenient substitute. This I found in concentrated manures like Standen's, which suits the Strawberry admirably, and, if given in the right quantity and at the right time, renders liquid manure quite unnecessary. I have used this manure now for years—first, by mixing it pretty liberally in the soil in which the Strawberries are layered, again in the loamy compost in which they are potted, and finally in the soil with which the saucers are filled that are placed under the pots as soon as the plants are introduced to heat, and into which they root through the hole in the bottom. Our plants of Héricart de Thury and Black Prince, which have been thus treated, are now matured, and range from 15 in. to nearly 20 in. across, with broad leaves of the texture of leather and pots crammed with roots. They have received nothing stronger during the season than clean and wholesome water from the village reservoir, and will receive nothing stronger till they have done fruiting as heretofore, thus saving both trouble and accident from the use of liquid manures.
J. S. W.

Drying Hardy Fruit.—This is a question of some importance to all who have gardens. Quantities of fruit are wasted in this country for the want of some simple system of preserving it. The Americans have of late years made great progress in various kinds of drying machines, by which their common hardy fruits are dried very successfully, both for home use and for export. These drying machines, however, are mostly adapted for drying fruit in quantity for commercial purposes. We have lately been interested to see the extensive way in which all ordinary fruit, now so abundant (Pears, Apples, and Plums), were being dried in a Swiss house. Single layers were packed in shallow trays with sieve-like wire bottoms, and these were placed one over the other in a large oven reserved for the purpose in a cooking range, and in it thoroughly dried. Such quantities were preserved as supplied a very large family till the hardy fruits come in again. Of course fresh fruit is better than dried fruit, and in the case referred to it is used in preference as long as possible. But an immense quantity of fruit perishes before it can possibly be used fresh, and therefore other means of preserving it than are common with us are desirable. Of course the process does not supplant various excellent ways of preserving fruit in bottles and jars. It is mainly useful when the great harvest of the orchard is gathered in autumn, and by its use the products of this harvest are saved for food. Fruit dried in this way has an advantage over any other mode of preserving in the facility of carriage if it be marketed, and it would probably be more agreeable to most consumers than fruit preserved in any other manner; it is, moreover, the way by which fruit can be preserved so that it may be sold at reasonable prices to the working classes in towns.—V.

THE INDOOR GARDEN.

IMPATIENS JERDONIÆ.

Though very different from the common Balsam of our gardens in general appearance, this plant is botanically nearly related to it. To those who love and grow flowers for their own sakes it is frequently a matter of surprise that plants, beautiful in themselves, very distinct in character, and, as one might suppose, possessing every property to recommend them for growing generally, should too frequently, through caprice, fashion, or some unknown cause, be allowed to go almost out of cultivation. Such has been the case with the plant in question. When first introduced, if my memory serves me rightly, some twenty-five years ago or so, it quickly became a favourite, so much so, that few people possessing a stove were without it. Its comparatively compact habit and profuse disposition to flower were such then, as now, as to place it within the means of culture by those who had little heated glass space. Another advantage possessed by it is that it does not require great heat; but there is one matter connected with its cultivation essential to its very existence, and that is, in the winter, when at rest and all but denuded of leaves, it must be kept very dry at the root, and also in a comparatively dry atmosphere, as well as near the light, otherwise its succulent stems are apt to decay. The whole texture of the stem and branches of the plant is very similar as regards their fleshy character to the ordinary annual Balsam in general cultivation; consequently, it will be seen that in propagation the cuttings will not do to be kept too close or confined, and they must have comparatively little moisture about them. It is best propagated in the spring about the beginning of March, taking for cuttings portions of the mature preceding season's growths, as in the case of a healthy plant these branch out freely, attaining, during the season, a length of from 4 in. to 10 in. The smaller size, severed at their base, will be found most suitable. They should be inserted singly, or two or three together, round the sides of small pots, well drained, and half filled with a mixture consisting of equal proportions of fine peat and sand, the upper portion being pure sand. The sand must not be made more than very slightly damp—in that condition best described as neither wet nor dry, a state in which it must be kept until the cuttings have formed roots. As before said, they must not be subjected to close confinement in a frame or under propagating glasses, or they are almost certain to become a rotten mass. They do the best on a shelf near the roof or set close to the upright front or end glass of the house or pit in a temperature of 60° at night with a proportionate rise during the day. Thus treated, they will emit roots freely in a few weeks, the presence of which will be indicated by the points of the shoots beginning to grow.

If the cultivator is anxious to get the plants on in size quickly, two or three of the newly-struck cuttings may be placed together in a 3-in. pot, or singly if deemed preferable. This Balsam succeeds best in material of a light, open nature, partaking more of the character of that in which Orchids are grown than any compost more retentive. Two parts good fibrous peat added to one of chopped Sphagnum, with which is mixed a liberal sprinkling of charcoal, broken to the size of Horse Beans, and some silver sand, will answer perfectly. The pots should be one-fourth filled with crocks or charcoal for drainage, and the material should be pressed moderately close round the roots. The temperature may be raised as solar heat increases, but the plants never require so much warmth as many stove subjects; the heat kept up in an intermediate house suits them best. They will also do with more air than is liked by the generality of stove plants. The nearer they are kept to the glass the better, using a very thin shade in the middle of the day during bright weather. Through the season of growth they will bear watering at the root freely, and will also be benefited by syringing overhead once a day, but this should be done early enough in the afternoon to allow the moisture to get dried up before nightfall.

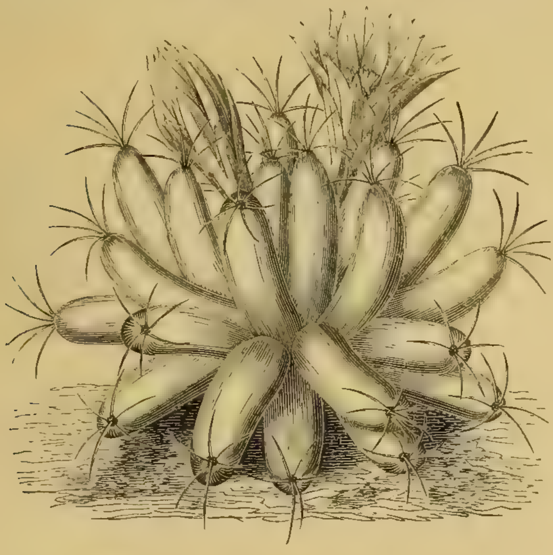
By midsummer sufficient root progress will have been made to admit of the young plants being transferred to pots 1 in. larger; or, in the case where two or three were put together, and are intended to be grown so, they will bear a 2-in. shift. It is naturally of a bushy habit, to still further assist which the points of the shoots may be taken out, but every operation of this kind should be done with the knife, as a bruise resulting from pinching is not unlikely to cause the shoots to rot. The singular-shaped, yellow and pink-tinged flowers are produced so freely that in all probability some of the plants will bloom the first autumn. After the flowers are faded, pick them off, and dispense with shading as the sun begins to decline in power, at the same time reducing the temperature of the house; they must likewise be kept drier at the root and not syringed overhead at all. During the growing season a shelf near the roof will be the most suitable position for wintering them, in a house or pit, where the night temperature is about 55°, giving very little water from the time they cease to grow. In fact, the soil through the whole season of rest should be kept, as to moisture, much in the same condition as that of the majority of Mexican Orchids during their dormant period. Towards the end of February give a little additional warmth with more moisture in the atmosphere, and, as soon as growth commences, more water to the soil. By the beginning of April the roots will commence to fairly extend, and pots 2 in. or 3 in. larger may be given, using soil similar in character to that advised the preceding season. The plants will now begin to grow apace, and will require two or three neat sticks each to support them; little further stopping will be needed, treating in other respects, as to shade, moisture, heat, and air as during the first summer. If all goes well, they will now grow freely, and by the end of July or beginning of August will have their shoots fully clothed with flowers; as soon as these show themselves, cease syringing overhead, or it will sometimes have the effect of causing the advancing bloom-buds to fall off.

During the time of flowering they may be placed on the front stage of the stove or intermediate house, where, associated with other blooming or fine-leaved plants, they will form a very distinct feature. When the flowering is over it will be well to move them to their original quarters on a shelf near the glass, treating them through autumn and winter as before. The ensuing spring they will bear pots 3 in. or 4 in. larger, but in this it is well to be guided by the quantity and condition of the roots, as they are impatient of too much pot room. When the potting is carried out as much of the old soil may be removed as can be got away without injuring the roots. During this summer the plants will attain a size that will enable them to produce flowers as abundantly as may be expected, however long they are grown, although with treatment such as advised they will usually last for years, but being essentially what may be termed plants of small growth they have a better appearance, and are more useful cultivated in numbers of medium size than when grown larger; consequently, it is advisable to each year propagate a sufficient quantity of young ones to take the place of such as get less shapely and not so well furnished. This Impatiens is an excellent subject for growing in small or medium-sized wire baskets suspended over the paths, and in no position is it seen to better advantage when in flower, but when so used, instead of being trained upright the shoots should be tied in a horizontal position over the edge of the baskets. For this purpose it is also better to use three or four of the young struck cuttings together; it is likewise better to keep them in pots, plunging these in the baskets, filling up with Sphagnum, in which a few pieces of Lycopodium are planted in the spring, which much improve the appearance of the baskets, and add to the general effect when the plants are in bloom. Their treatment in other respects when in baskets requires to be in no way different from that which is advised for pot culture. When the plants flower sufficiently early in the summer months before the cool autumn weather sets in they may be put for a few weeks in a conservatory, not exposing them during the time to currents of cold air. I have never seen this Impatiens attacked by any of the usual stove pests, except green fly, for the destruction of which fumigate repeatedly, but not too severely.

T. Baines.

MAMMILLARIA LONGIMAMMA.

This deep green-coloured species bears large yellow flowers, and has the merit of being half-hardy. It comes from the high lands of North California. Though described as a Mammillaria, I believe that it is really an Echinocactus, judging from the size and shape of the flowers.

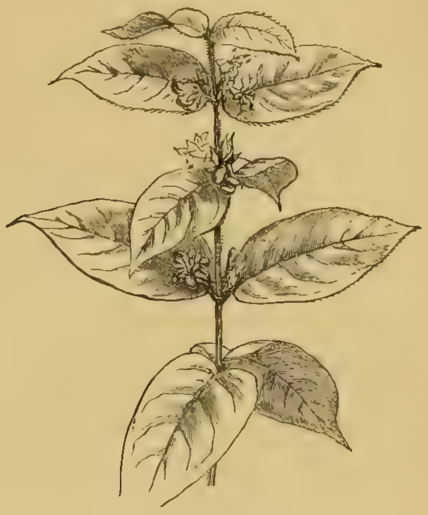


J. Croucher.

Sudbury House, Hammersmith.

A WINTER-FLOWERING HONEYSUCKLE.

I am glad to see attention directed to Honeysuckles for pot culture, as up to the present time they have somehow or other been almost entirely overlooked. Why this should have been so I am at a loss to conceive, as during the early summer months, when they can be had out-of-doors or gathered from the hedgerows, they are much sought after. Flowers that are so delicately perfumed have a special value in winter, and as Honeysuckles can easily be forced and had in bloom at that season, the wonder is that they are not more largely grown for the purpose. There is one variety, however, I think not generally known that flowers naturally about Christmas, the name of which is Lonicera fragrantissima, one of Mr. Fortune's introductions from the north of China; and although not so large and showy as some, it is of great value for working into bouquets or using for button-holes, for either of which purposes its pale, highly-perfumed blossoms are particularly adapted. If grown in pots and kept pinched in so as to induce a lot of small, twiggy shoots, it is very floriferous, as also when trained to a wall having a sunny aspect, and treated in the same manner, as every joint or bud then emits blooms, which are produced for some time in succession. The great advantage of growing this particular kind is, that without any artificial heat whatever the sweet odours of this favourite class of plants may be enjoyed at a dull time of year, as all it requires is a little shelter from the wintery blast, and with this afforded, quantities of flowers may be gathered from it. The best way to treat it when used as a pot plant is to spur or prune it back a little every spring just before the young growth commences, so as to get as many fresh shoots as possible, the heads of which, nipped out well, as above mentioned, cause them to break again and form fine bushy heads. Two or three of these placed in a greenhouse would quite scent the air, and last till any of the other varieties can be got in. The best of these for forcing are the shrubby kinds, such as Ledebouri, præcox, odoratissima, and Xylosteum, but most of the climbing varieties are amenable to the same treatment, and when somewhat stunted in pots partake a good deal of the habit of the former. All the different sorts of Honeysuckle may be propagated in several different ways, and cuttings put in now of the half-ripened young wood will strike freely under glasses in sandy soil on any open border, or they may readily be increased by layers, but these take a year to root sufficiently to be severed from the parent plant. Short pieces of the tender growths taken off with a heel in the spring and placed in moist heat soon make plants, and this is the most expeditious mode of working up a stock.



Lonicera fragrantissima.

S. D.

ACACIAS AND THEIR CULTURE.

Acacias, though numerous, and many of them very showy, are now but seldom met with in cultivation. This arises partly from the great similarity which many of the species bear to each other, and partly from the fact that they have been driven out of notice by newer subjects. Many of them should, however, find a place in every collection of flowering plants in which variety is a desideratum. A. Drummondi, when covered with a mass of bright yellow flowers, is one of the most telling plants we have, and is valuable either as a small plant or large specimen, flowering equally well in either state. Bushy, well-grown plants in 4-in. and 6-in. pots are very useful for decorative purposes, the habit being neat and compact, and the colour striking. When associated with such plants as Cinerarias, Cyclamens, and Azaleas it is seen at its best. This species is easily propagated from half-ripened shoots inserted in silver sand, and placed in a close frame or house, covering them with a bell-glass. In March they may be potted off into a compost of fibrous loam and peat, and kept growing along during the summer in a frame, stopping them occasionally to induce a bushy formation. In September they should be thoroughly hardened by full exposure to sun and air, housing them about the commencement of October. The following season shift into 4-in. pots, placing a neat stake to each, tying the stem firmly thereto at the base, and treat them as before. They will the next year flower profusely, and may then be shifted on as required. Where large specimens are necessary for conservatory decoration this Acacia will be found very suitable, as it is not at all of a miffy nature or liable to go off as many New Holland plants are apt to do when they arrive at specimen size. A. pulchella is a beautiful species, and not at all difficult to grow; it is worthy of a place in every collection. A. armata is an old and well-known kind, one that will bear a deal of rough usage, but it is very liable to be attacked by scale, which must be promptly exterminated if the plants are to be kept in a healthy state. A. lophantha is a great favourite for window decoration, its light, feathery, gracefully-disposed foliage rendering it one of the most suitable plants which we possess for that purpose. It should be grown by every one, and as it comes freely from seed, which may be obtained very cheaply, there is no reason why any one who has the smallest amount of convenience for plant growing should not possess it. The seed should be sown early in the spring, if possible in a little gentle bottom-heat, and kept growing on during the summer months, shifting so that it does not become stunted; a free, quick growth is essential to secure handsome foliage. Plants suitable for window decoration may be thus obtained the first year. Where convenience for raising the seeds easily does not exist, then they may be sown in April and placed in a cold frame, placing a piece of glass on the pan. When up pot the plants off into small pots, and keep them till the following April, when they may be shifted into 4-in. pots. By no means allow them to suffer from want of water, as they will become naked at the base, thereby much impairing their decorative value. Good fibrous loam and leaf mould suit them very well, but they are by no means fastidious as to soil. The best plants I ever grew were potted in some very old rotten manure, but if this be used it should have been thoroughly well sweetened, and should be at least three years old. This plant is most useful when from 1 ft. to 2 ft. in height, but if sufficient space can be accorded it, it will increase in beauty as it attains larger dimensions. It is not advisable, however, to retain them after they have filled the largest-sized pot; it is better to grow a few on every year, so that those that show signs of becoming bare or stunted may be made away with. Where there is sufficient space to plant it out, it naturally assumes more handsome proportions than are to be obtained by pot culture. It is well worthy of a place in a large cool house, as, by reason of the unique disposition of its foliage, it affords a fine contrast to most other plants. I once had it planted out amongst Camellias in a lofty house, and it presented at all times a charming appearance. This species does not flower in a small state; it is, consequently, to be regarded as being valuable only as an ornamental foliaged plant. The Acacias are essentially amateurs' plants, inasmuch as they are of easy culture, and do not require so much care in a general way as many greenhouse plants do; they grow rapidly, and are by no means fastidious with respect to winter quarters. Those who would wish to grow a few of this genus should procure their plants in the autumn, choosing young, thrifty plants, if possible, in 3 in. pots. Keep them in a cool, airy house during the winter, water only when dry, and they will be in good condition for growing on when spring arrives. John Cornhill.

Byfleet.

Drip-proof Shelves.—M. Ortgies in the Botanic Garden at Zurich stores plants on shelves to the extent of having several of the shelves directly over each other. He prevents all drip by using a water-proof zinc tray, which is neatly fitted on a strong shelf formed of several pieces of ⊤ and angle iron. The whole forms a strong and very durable contrivance, and is withal neater in appearance than an ordinary shelf. Each zinc tray has 1 in. of gravel in it.—V.

PROPAGATING.

Senecio pulcher.—This pretty hardy border Groundsel, of which a coloured plate was given in The Garden (Vol. IX., p. 572), is best increased by means of cuttings made of the roots, and the best month for inserting them is November. Take up a plant, and remove a portion of its roots, which should be cut up into pieces 1 in. long, keeping all the top parts one way, as they must be put in in that manner. Well drain the pots with crocks, and fill them with soil composed of loam, leaf-mould, and sand in equal parts, putting ¼ in. of sand on the top; water, and insert the roots ½ in. apart in an upright position, leaving the tops just above the sand so that the light may induce them to grow. Place them on a shelf in the propagating house near the glass, and in three or four weeks they will begin to make growth at the top, between the pith and the rind of the root. Water must be given sparingly until they show signs of growth, when it may be increased in quantity. The soil will be full of roots and the plants ready to pot off in March. It is best to keep them in the house for two or three weeks before they are removed to cold frames, in which they should be placed until they can be planted out. H. H.

Root cutting of Senecio pulcher.

Propagation of Daphne Blagayana.—This fine new introduction, illustrated in The Garden (p. 200), I find may be readily propagated by layering. A short time ago I pegged a few shoots of it down in some light soil, previously cutting them half through. Later on, when roots were emitted, I completely severed the shoots, and the result is several good specimens, and the old plant is again breaking freely. I think this mode of propagating is preferable to grafting, as by that process the dwarf growth of D. Blagayana is altered into the generally robust growth of the stock. Doubtless those who fortunately possess this plant will be pleased to learn that it may be propagated so simply.—A.

Cineraria maritima from Seed.—I quite agree with Mr. Groom (p. 289) in reference to this matter, and should be glad if he can explain why young plants of this Cineraria are so much greener than old plants raised from cuttings. Some years ago, when using this plant extensively for ribbon purposes, some seedlings were employed to complete a line, and their green tinge completely marred the effect. It was thought to be a different and superior variety, but next year the same plants came white as the whitest, and it was found to be a matter of age only. Has any one seen a golden variety of this? We had it here once (a sport); we merely placed it in heat to force growth for propagating, neglected it one hot day, and it dried up and perished.—D. T. Fish.

Pelargoniums from Root Cuttings not True to Name.—As it is customary about this time, when shaking out and repotting old plants of what are called show Pelargoniums, to make cuttings of the roots of those kinds that are new or of which the stock is small, it may be worth mentioning that many of the regal kinds, such as Queen Victoria, Beauty of Oxton, &c., frequently do not come true from such cuttings. We had a quantity of regal Pelargoniums from root cuttings two or three seasons ago that perplexed us considerably, as they were not true to name and the propagator was certain that no mistake had been made in naming them; the flowers also were quite distinct from any kinds which we grew. The difficulty was at last solved by some of the plants putting forth branches bearing flowers resembling the plants, from which the cuttings were taken, while the rest of the branches bore wretched nondescripts. It would be interesting to know if this phenomenon has been observed elsewhere, and if any explanation can be offered regarding it.—Chas. E. Pearson, *Chilwell.*

Sempervivum Reginæ Amaliæ.—This fine species of House Leek in its true form is now in Messrs. Frœbel's collection at Zurich Generally the plants going under this name belong to S. Heuffeli.

THE FLOWER GARDEN.

CLEMATISES IN MIXED BEDS.

I hold the opinion that although our fine hardy Clematises have increased in numbers and variety and cheapened in price during the past ten years, yet cultivators have not utilised them to the extent to which they might be made serviceable. Occasionally one meets with C. Jackmanni trained to a wall, or used for pillar purposes, or for covering archways over walks, and sometimes plants of it are employed in beds; but only unfrequently so. In respect to the latter mode of utilising them they can be made of great service as permanent bedders, using something else in association with them to prolong the flowering season to the greatest extent. There is one great advantage about the Clematis, that is, when planted out for permanent service, if the roots be mulched in summer and manured in winter, the plants increase in strength and vigour, and this means, under good management, a greater quantity as well as heightened beauty in the flowers. The pretty and free-blooming spring-flowering varieties have not been so much used in our gardens as they deserve to be. They are characterised by free growth and a greater hardiness of habit than is generally supposed. I can particularly recommend the following varieties: Albert Victor, deep lavender with purple bars; azurea grandiflora (patens), pale mauve-lilac; Gem, deep lavender, a little later in blooming than some of the spring-flowering types, but very useful; Lady Londesborough, silver-grey with pale bars; Lord Londesborough, deep mauve; Miss Bateman, pure white with chocolate anthers, very free indeed; Standishi, deep lilac, very free and attractive; and Victor Lemoine, violet tinted with blue, very good. Here, then, are eight varieties that would make charming beds in spring; but, in order to give the beds a furnished appearance, I would also plant them with Tulips, Hyacinths, Ranunculuses, Anemones, and other early-flowering subjects that would precede the Clematis. The profuse growth of the latter spreading over the bulbous plants would do them no harm, as after they have done blooming, the Hyacinths and Tulips would be comparatively worthless. A few bulbs of Gladiolus dotted about the beds and some later-blooming Lilies would carry on the flower till late in the summer.

If it be objected that the spring-flowering Clematises are apt to be cut back by frost, it may be stated that as a rule they suffer much less from this cause than is generally supposed. For some years past Mr. Charles Noble has been growing at his Sunningdale nursery a number of spring-flowering Clematises as pillars tied up to stout poles, and it is very rarely, indeed, they are destroyed to any degree by frost. If severe weather threatened just at flowering time, a few branches of Spruce, Fir, or any evergreen laid over the beds would ward off the effects of the frost and keep the flowers from injury. It is not necessary to plant many specimens in a bed. For small beds one or two may be used, according to their size; for larger beds three or four. The longer a plant is established in the soil, the more vigorous growth does it make, and if a number of plants were introduced to a bed in the first instance, some should be taken out as the others increase in size and strength. One caution is necessary here. The spring-flowering Clematises flower from the wood made the previous summer, and the grower should be careful not to cut it back, but simply thin it out, removing only the decaying and weak shoots, and shortening back the immature growths at the points. When the old wood is spread out on the beds after planting with bulbs or any other plants, it should be so distributed as to give the beds a furnished appearance when the shoots break into leaf. Of the summer-blooming varieties, which may be said to flower from early in July till October, the following are well adapted for bedding purposes: Alexandra, pale reddish-violet, flowers very freely; hybrida splendens, velvety purple; Jackmanni, deep velvety purple, one of the very best; Lady Bovill, soft greyish-blue; lanuginosa nivea, fine pure white; magnifica, reddish-purple with bright bars; Otto Frœbel, greyish-white; rubro-violacea, maroon-purple; Star of India, reddish-plum with red bars; tunbridgiensis, deep bluish-mauve; velutina purpurea, blackish-mulberry; and Viticella rubra grandiflora, a very fine Clematis, bright brick-red, very distinct in colour, small-flowered, but very free.

All the foregoing bloom from the young wood made the same season; so they can be cut back to any extent in the autumn or spring. The stronger the plants are the more necessary is it to cut back hard when a limited space only has to be covered. The beds in which the foregoing varieties are planted can be furnished with plants that can both precede and follow the Clematises, and also, if thought desirable, flower in combination with them. A bed of C. Jackmanni, for instance, studded over with Anemone japonica alba, would make a fine and effective combination; and there are many other plants that would readily suggest themselves as well adapted for the purpose. For any position in which some effective decorative plant is required, these Clematises will do well, provided it be open and somewhat sunny; and they do well in shaded positions, provided they be somewhat open. One of the best for this purpose is rubella, a variety that should be included among the summer bedders; it is most profuse of bloom, and the more shaded the position the finer the colour. I have a plant of rubella covering a portion of a west wall, and by pinching back some of the leading shoots two or three times a lengthened succession of bloom is obtained. One remark is necessary. In anything like confined places snails and slugs are apt to devour the young growths put up from the base of plants cut down close to the ground. I have found a few dressings of lime and soot excellent preventives, and the shoots when once started come away with great strength. At planting time let the Clematises be put into thoroughly good soil. They root freely, and are gross feeders, and need plenty of sustenance. Give them plenty of manure at planting time, and follow this treatment up with mulchings in spring and some liquid manure at flowering time; by doing so large and richly-coloured flowers will undoubtedly be the result. D.

BOUVARDIAS FOR THE FLOWER GARDEN.

There does not appear to be anything to hinder these beautiful plants being used in the flower garden during the summer and autumn months, when their conspicuous flowers of numerous shades of colour would be exceedingly attractive. Hitherto they have been used as winter-flowering conservatory plants, but they will do perfectly well in the open air from early summer till October or until frost comes. Whether they would actually stand a touch of frost or not I would not venture to say, but I think they would. Our Bouvardias have been plunged in the ground in a sheltered situation throughout the summer until now (October), and the plants would be ill to beat, though ours is one of the coldest situations in Yorkshire. The plants were disposed to flower long ago, but the buds were picked off till the beginning of September, and since then they have been coming freely into bloom, and the flowers are all that could be desired for purity of colour and brightness. As I have passed, I have often thought what a splendid addition, as well as novelty, they would be to the flower garden. Old plants cut down would, perhaps, be best for outdoor work, as they flower more freely and also earlier. Being a native of Mexico, I am afraid some erroneous notions are entertained as to the treatment required by the Bouvardia. In the new edition of the "Gardeners' Assistant" it is stated that "if flowers are required throughout the autumn (under glass), a portion of the plants should then be at once placed in a temperature of 68° or 70° at night with a few degrees higher in the daytime." This is simply misleading. With us they have been growing in a shallow frame with the lights off since ever danger of late frosts were over, and we are 700 ft. above the sea. Our difficulty has been to keep the plants from flowering. The shoots are exceedingly strong, and nearly as woody and stiff as a Weigela. The plants are in 5-in. and 6-in. pots, and many of them have from sixty to eighty flower trusses upon them, either fully expanded or coming on. Some of the plants are still in the cold frame, and are only covered in case of frost. I find it is not a good plan to prune the plants back in autumn, as they are apt to die. They should be left till they begin to sprout in spring, and then cut back as may be desired. Loam, peat, and sand is the compost used, and a little of Standen's manure is given once or twice during the season. J. S. W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Mentzelia ornata.—This seems a very handsome and distinct looking plant which, however, appears to bloom too late in our climate in which the sun heat is not sufficient for its full development. Would it be worth growing in pots for the greenhouse? Perhaps Mr. Thompson, of Ipswich, or some of your readers who know the plant well may enlighten me. I was very much smitten with a plant of it I saw lately, its only drawback being that the autumn weather seemed to damp off a little the numerous flowers and buds.—V.

The Surface of the Rock Garden.—We notice in the botanic garden at Munich that the surface of this is covered with pieces of Graywacke (a conglomerate or grit rock, consisting of rounded pebbles and sand firmly united together), brought all the way from the Tyrol. This, in addition to the use of sand and grit, prevents evaporation and helps the grower, no doubt; but we did not notice any better result than is usual in Continental botanic gardens in the culture of Alpine flowers. The use of stone and grit are, of course, indispensable in the rock garden, but the best and the right covering for eight parts out of ten of its surface is Alpine plants. Till this is recognised by growers we shall never have rock gardens worth looking at.

Transplanting Lilies.—Some of your correspondents ask as to the best time for removing Lilies; I think the safest guide is the appearance of the stems. When they begin to change colour and show that the growth is checked is the time when the old roots have done their work, and the new ones just showing themselves. I had occasion last week to take up some bulbs of a few different species of Lilies, such as L. pardalinum, L. californicum, L. Humboldti, L. Szovitzianum, L. auratum, and L. superbum, and found no difficulty in finding all but the last in a perfectly fit state to take up. While it is of course desirable that they should be moved when they are not at rest, if circumstances prevent this, late bought and late planted Lilies may do very well, as this year we have strong proof, in a couple of beds of L. auratum, the bulbs of which were bought and planted last April. These plants look as healthy and have had as fine flowers as any of the old and early planted ones, and, as they number some hundreds, it is not question of a chance bulb or two. Mrs. Newall speaks of her Lilies having been acclimatised; we have a curious instance of change of habit in L. auratum; these, of course, often seed when planted in the open air, but as a rule only strong plants do so. In a bed of seedling plants of L. auratum, which have bloomed for the first time this year, many of the weak young spindley stems bear seed. These almost baby Lilies bearing seed have an odd effect, and the fact seems to point to a change of habit from change of country.—G. F. Wilson, *Heatherbank, Weybridge Heath.*

Notes from Wardie Lodge, Edinburgh.—I never remember to have seen Helleborus olympicus in bloom in September, but it opened its flowers here on the 19th, and at the Botanic Garden I observed it in bud on the 5th Sept., while on H. niger there were both flowers and nearly ripe seed-pods. Cyclamens at the foot of our wall have done better than ever we have had them, but in spite of the fine summer Dahlia Cervantesi is still too late in flowering; probably it should be brought on in heat earlier than other sorts. I do not suppose that it will yield us any flowers this season. Mimulus cardinalis and Borago laxiflora are finely in flower now; by cutting them down when shrivelled up with the great heat and soaking them thoroughly, they made a second growth, and will be good all this month if the weather be favourable. A line 34 yds. long of the double lilac and lilac and white Colchicums is very satisfactory planted between the Grass verge and a line of Daisies (some eighteen sorts for spring flowering). Thus situated, they are kept clean and have plenty of green; the flowers just top the Grass and Daisy line, and, free from overhanging trees, they escape falling leaves which are apt to cause such thin flowers to damp off. Papaver spicatum is still throwing out fresh flowers and stalks; it is a most useful Poppy, distinct in colour, which is fawn or apricot with a white spot at the base of the petals to match the white stamens, and the young tufts of yellow-green foliage have always a neat appearance; it grows and flowers for six months. The beds of Crocus speciosus are charming, and much affected by honey bees, which, I observe, do not care for that grand autumn bedding plant, Sedum spectabile, which is always covered with drones, humble bees, and flies.—F. J. Hope.

PLATE CXLIX.

TWO NEW VARIETIES OF AMARYLLIS.

It has been asserted by good judges that notwithstanding cross breeding and the raising of new varieties of Amaryllis the flowers do not in reality show much improvement on old kinds. Last year, however, when the Royal Horticultural Society offered a series of prizes for new varieties of Amaryllis, some really distinct and improved kinds were brought forward, and if similar prizes be still continued they will, no doubt, produce good results as regards varieties of this the most useful of greenhouse bulbous plants. The two kinds shown in the annexed illustration were raised by Mr. Williams, of Holloway, and exhibited by him on several occasions at South Kensington, where first-class certificates were awarded them. The lower flower in the illustration, which is named Mrs. Rawson, belongs to one of the most distinct and beautiful of Amaryllises which have been raised for years. It is a seedling from marginata crossed with a deep crimson, and having the broad white margin extending to the base of the flower, partakes of the character of both parents. The uppermost crimson-flowered kind named Prince Teck is a garden hybrid of great excellence, the result of a cross between A. Ackermanni pulcherrima and A. Mendeli. The flowers are medium-sized, good in shape, and of great substance, a most important character in an Amaryllis. Amaryllises, on account of their showy flowers, ought to hold their own against all comers; but, like other plants, they have had their rise and fall, and the latter chiefly through bad treatment. So much is required in the way of flowers at most places, that plants, after blooming, get pushed aside to make way for others, and bulbs more especially come in for this hard usage, much to their detriment, for just at that time, of all others, they require the most care and attention to enable them to regain strength, form fresh flowers, and elaborate the requisite amount of sap to carry them through the period of rest. During the summer time there is no better or more suitable place for finishing these off than a common pit filled to within 18 in. or so of the glass with fermenting material, such as tan or leaves, that will afford a bottom-heat of from 80° to 90°, in which the pots should be plunged. This will induce them to form plenty of roots, and a corresponding amount of foliage, on which their blooming capacity depends. The ripening process later on is a very simple matter, brought about by a gradual exposure to sun and air after growth is complete.

A New Key to the Genera of Amaryllidaceæ.

We take the following interesting remarks on certain genera of plants popular in gardens from a paper by Mr. Baker in the "Journal of Botany":—

1. Galanthus.—Here I consider there are three species, viz., 1, nivalis, of which Imperati (Bert.), latifolius (Ruprecht), and reflexus (Herb.), are varieties; 2, Elwesi (Hook. fil., in Bot. Mag., t. 6166); and 3, plicatus. G. Reginæ-Olgæ, of Orphanides, I know by name only.

2. Leucojum.—Including Erinosma and Acis, as in Kunth, good as sub-genera, and under the latter Ruminia, of Parlatore—species eight or nine. L. Hernandezianum (Camb.) is evidently the same as L. pulchellum (Salisb.), which is common in London gardens. Of the species of Acis in Kunth I should join grandiflorum with trichophyllum. None of those figured by Jordan and Fourreau ("Icones," figs. 103 to 108) seem distinct from those given in Kunth. L. autumnale is autumnal, all the others vernal. L. hyemale is a misleading name, as the plant flowers in April (not autumn, as stated by Kunth); Ruminia nicæensis (Jord. and Fourr.) is identical with it.

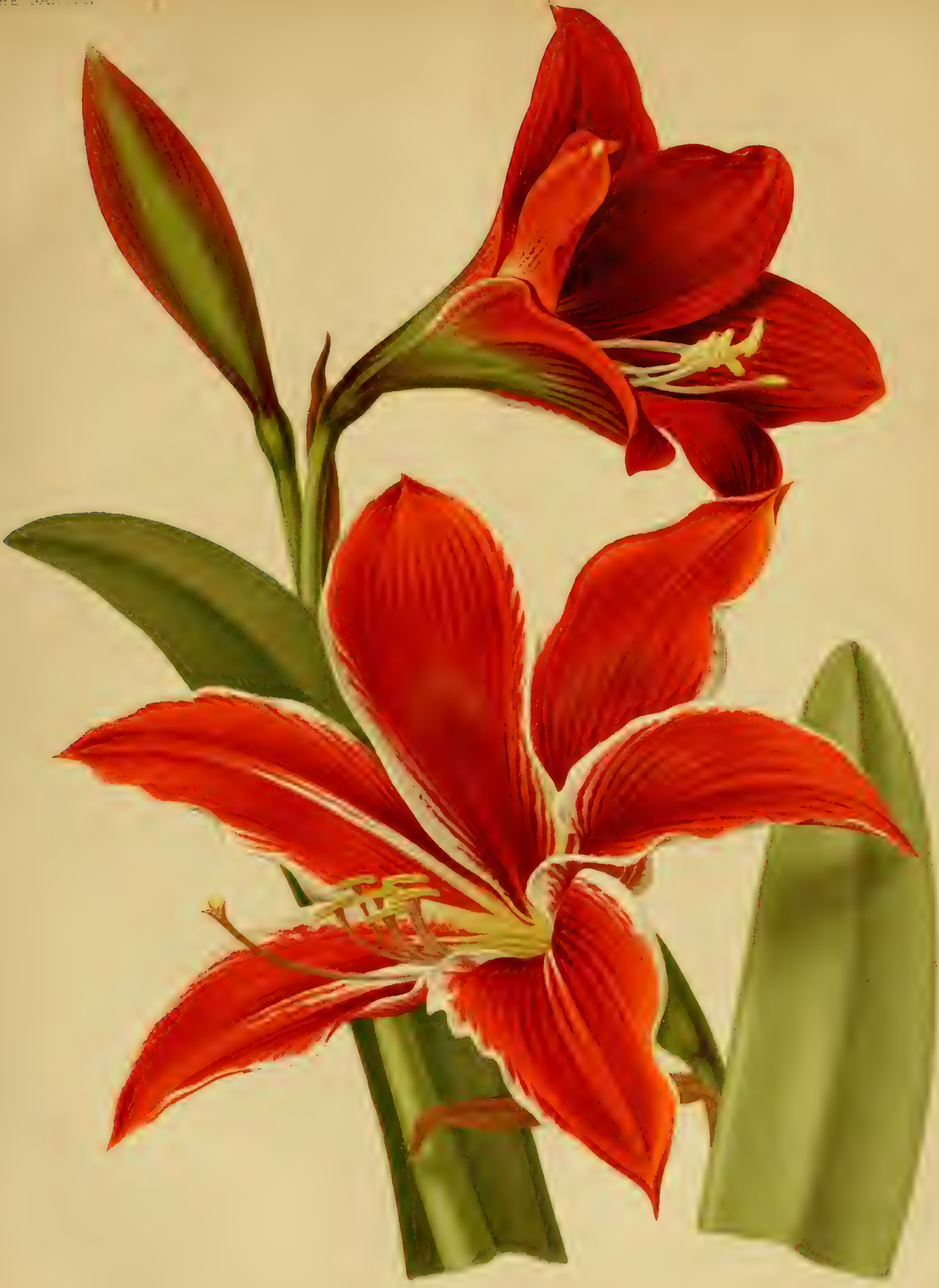
3. Strumaria.—Including Imhofia. Seven species, Baueriana being conspecific with liguæfolia, and Burchelliana and Bergiana with geminata.

4.—Haylockia.—Monotypic.

5. Apodolirion.—Three species, as described Journ. Bot., 1878, p. 74.

6. Gethyllis.—Four species known in flower, and one clearly distinct, and one doubtful in fruit only. G. acaulis (Blanco) is doubtless a Curculigo.

7. Cooperia.—Two species; mexicana, now known in flower, being identical with Drummondi.



VARIETIES OF AMARYLLIS.

8. Sternbergia.—Including Oporanthus; five species, Kunth's needing much reduction. S. dalmatica, ætnensis, citrina, and perhaps even Clusiana seem to be the same species as colchiciflora, and Fischeriana and probably exigua to belong to lutea. Of new discoveries we have S. macrantha, J. Gay (S. latifolia, Boiss.), the finest plant of the genus, and S. pulchella (Boiss. and Blanche). S. sicula (Tineo) is a variety of lutea, and S. exscapa (Tineo) altogether doubtful.

9. Zephyranthes.—Two sub-genera, as in Kunth. Species about fifteen, Grahamiana being a form of sessilis; flavescens and acuminata of mesochloa; Lindleyana and nervosa (M. and G.) identical with pallida; and texana the same as Habranthus Andersoni var. texanus.

10. Pyrolirion.—The three species in Kunth are doubtfully distinct; albicans rests still solely on the authority of Feuillé, and there are two novelties still undescribed in Mandon's "Plants of the Bolivian Andes."

11. Hæmanthus.—Species about thirty, five of which are tropical African, and the rest Cape. The structure of the flower is very uniform through the genus. Of the plants in Kunth, concolor and Hookerianus are probably the same as sanguineus, strigosus, and brevifolius—mere forms of carneus; tenuifolius the same as abyssinicus; and H. coccineus, Forsk. (H. arabicus, Roem.), of which there is a type specimen in the Smithian Herbarium, identical also with abyssinicus. Of published novelties since Kunth, there are H. natalensis (Hook.), Bot. Mag., t. 5378; H. cinnabarinus (Decne.), Bot. Mag., t. 5314; H. deformis (Hook., fil.), Bot. Mag., t. 5903; H. rotularis, rupestris, and Katharinæ (Baker); and there are four or five novelties in the group of H. coccineus still undescribed.

12. Buphane.—Two distinct species, disticha and toxicaria being identical, and a third (guttata) doubtful; toxicaria has been gathered lately in Zambesiland by Dr. Meller, and on the banks of Lake Tanganyika by Lieut. Cameron.

13. Hessea.—Species two to three, Dregeana being doubtfully distinct from stellaris. The plant described in detail by Kunth under H. crispa is this same stellaris, and Amaryllis crispa (Jacq.), Hort. Schoen, t. 72, is a distinct species.

14. Carpolyza.—Monotypic.

15. Lapiedra.—Species two. Martinezi, imperfectly described by Kunth, is fully figured by Boissier, Voy. Hisp., t. 171; and a second very distinct species, yet undescribed, is in Schousboe's Mauritanian collection.

16. Anoiganthus.—Two species, as described in Journ. Bot., 1878, p. 76.

17. Ungernia (Bunge), in Bull. Soc. Imp. Nat. Mosc., 1875, ii., 171. Monotypic.

18. Clivia.—Three species, the two additional to Kunth's being C. Gardeni (Hook.), in Bot. Mag., t. 4895, and Imantophyllum miniatum (Hook.), in Bot. Mag., t. 4783.

19. Phædranassa.—Three species, chloracea, obtusa, and multiflora, being mere forms of one; and the two novelties, P. Carmioli (Baker), in Ref. Bot., t. 46, and P. viridiflora (Baker).

20. Callipsyche.—Three species, the two additions being C. aurantiaca (Baker), in Ref. Bot., t. 167, and C. mirabilis (Baker), in Ref. Bot., t. 168.

21. Griffinia.—Seven species now known, the additions being G. ornata (Moore), G. Blumenavia, Bot. Mag., t. 5666, and G. Liboniana (Morren). G. dryades (Roem), the finest plant in the genus, mentioned in Kunth by name only, is figured and fully described by Sir Joseph Hooker from the Saunders' collection, Bot. Mag., t. 5786.

22. Sprekelia.—Only two good species; glauca, ringens, and Karwinskii being varieties of formosissima.

23. Nerine.—Including Ammocharis and Lycoris. Species, eighteen. I cannot make out any definite line of demarcation between these three. If we widen Ammocharis, as in Kunth, to take in Nerine lucida and marginata, it differs from the other two by its short, stout scape, and resembles Brunsvigia in habit, but not in ovary and fruit. Additional species to those in Kunth are Nerine japonica (Miquel) and Lycoris Sewerzowi (Regel).

24. Brunsvigia.—Eight species; B. Cooperi (Baker), in Ref. Bot., t. 330, being added to those in Kunth.

25. Amaryllis.—Monotypic, A. blanda being a variety of Belladonna, and A. staminea (Seubert), a synonym of Hippeastrum stylosum (Herb).

26. Hippeastrum.—Including Habranthus, Phycella, and Rhodophiala, as in Kunth; and Rhodolirion (Philippi), in "Linnæa," xxix., p. 65. Species about fifty, those in Kunth needing to be much reduced, especially in Habranthus. Many novelties have been described by Philippi and others. For details, see Journ. Bot., 1878, p. 79.

27. Vallota.—Monotypic.

28. Crinum.—Species about fifty, those in Kunth needing little change. C. Lindleyanum, undulatum, attenuatum, Commelyni, and graciliflorum are scarcely more than varieties of erubescens. The principal novelties are C. Moorei (Hook., fil.), in Bot. Mag., t. 6113, C. Tinneanum (of Kotschy and Peyritsch), C. uniflorum (F. Muller), C. floridanum (Frazer), and C. Macowani (Baker); and there are three or four others still undescribed. C. brachynema (Herb.), imperfectly described by Kunth, which differs from all the rest by its short filaments, has now been introduced in a living state from Western India, and is figured in Bot. Mag., t. 5937.

29. Chlidanthus.—Monotypic; Ehrhenbergi being apparently the same as fragrans, and Cumingi something totally different, probably Hippeastrum advenum.

30. Urceolaria (Herb.).—(Collania (Schultes) a later name).—Monotypic, fulva being a mere form of pendula.

31. Pentlandia.—Monotypic.

32. Cyrtanthus.—Three sections: Cyrtanthus proper, Monella, and Gastronema, with the last of which Cyphonema is identical. Species fifteen, pallidus, striatus, and ventricosus being apparently varieties of angustifolius; and the additions C. Mackeni (Hook., fil.), C. sanguineus (Hook.), in Bot. Mag., t. 5218, and C. Macowani and Tucki (Baker).

33. Eustephia.—Monotypic. See Journ. Bot., 1878, p. 39.

34. Vagaria.—Monotypic. Pancratium parviflorum (Kunth) is identical.

35. Calliphruria.—Species three; the additions being C. edentata (Baker), in Bot. Mag., t. 6289, and a third, still undescribed.

36. Tapeinanthus.—Carregnoa (Boiss.).—Monotypic.

37. Hyline.—Monotypic.

38. Hymenocallis.—Including Choretes. Species ten to fifteen, those in Kunth needing great reduction. H. Bonplandi is a Eucharis.

39. Ismene.—Species five to six; pedunculata, Macleanica, and virescens being apparently identical. Two novelties yet undescribed. I. deflexa is probably a hybrid between Ismene and Elisena, such as Colonel Trevor Clarke has lately raised.

40. Pancratium.—Species about a dozen; carolinianum being undistinguishable from maritimum; malabathricum (Herb.) from triflorum (Roxb.), and cambayense (Herb.) from longiflorum. Additions are P. parvum (Dalzell) and P. collinum (Cosson & Durieu). P. tortifolium (Boiss.) is P. tortuosum (Herb.), and P. Chapmanni (Harv.) and P. tenuifolium (Hochst.) are P. trianthum (Herb.)

41. Placea.—Species four; the three additions being P. lutea, Germaini, and Arzæ, of Philippi.

42. Elisena.—Species two to three.

43. Eucharis.—Species two. E. candida (Planch.), in "Flore des Serres," t. 788, and E. grandiflora (Planch.), in Bot. Mag., t. 4791 (E. amazonica, Linden).

44. Calostemma.—Species three. See Benth. Fl. Austral., vol. vi., p. 457.

45. Eurycles.—Species two; australis being the same as amboinensis.

46. Leperiza.—Species two; a second, still undescribed, imported lately from Ecuador by Messrs. E. G. Henderson & Son.

47. Stenomesson.—Including Coburgia. Species about ten, Kunth's needing great reduction. See Baker in Ref. Bot., sub. t. 308. Incarnata, splendens, bichroma, variegata, chæapoyensis, versicolor, læta, and miniata appear to be mere forms of one species, and recurvata, discolor, obragillensis, lutea, and Macleanica of another. Additions are S. Pearcei (Baker), in Ref. Bot. t., 308, and S. suspensum (Baker), in Ref. Bot., t. 22.

48. Eucrosia.—Monotypic, the habitat being Ecuador, not Peru, as given in Kunth.

49. Callithauma.—Species two.

50. Narcissus.—Including Corbularia, Ajax, Queltia, Ganymedes, and Hermione. Species twenty-one.

51. Ixiolirion.—Monotypic, tataricum being a mere variety of montanum. It extends to Beloochistan and Afghanistan.

52. Polianthes.—Monotypic.

53. Alstrœmeria.—Species twenty to thirty, or more, a large number of novelties from Chili having been described from Philippi and several from Brazil by myself (Journ. Bot., 1877, p. 259).

54. Bomarea.—Including Sphaerine and Wichuræa. Species about fifty, Kunth's needing to be greatly reduced, especially in the neighbourhood of B. edulis. A fine addition is B. Carderi (Masters), and there are many others still undescribed. Sphoerine and Wichuræa differ from Bomarea in habit alone. Both this genus and Alstrœmeria greatly need re-monographing from present material.

55. Leontochir (Philippi).—Desc. Nuev. Plant., p. 69. Monotypic.

ROSE GROWING IN FRANCE.

(Continued from page 316.)

The Brier.

The Wild Brier, which furnishes us with nearly the whole of the stocks for grafting Roses, fully deserves a special description in every practical treatise on the cultivation of Roses. It is, however, rarely that we find it spoken of in such works, writers of Rose manuals apparently caring but little to learn what it is and whence it comes. The price of the Brier in Paris is always rather high. Some time since Brier stocks were at from 8s. to 12s. per 100, but lately, owing to some 40 or 50 per cent. of the wild trees having died, this price has become doubled. This mortality is partly due to the negligence, and still more to the ignorance, of those who collect the stocks. We think, therefore, that it may be useful to give the results of five years' experience of Brier stock collecting in the forests of the Haute Sâone.

The Wild Brier (Rosa canina) is indigenous to Europe. It is found in every forest and hedge, and propagates itself by seed and, above all, by suckers; in fact, it has the property in the very highest degree of throwing off underground stems which spread out a long way from the parent stem, and cause themselves, by their entanglements, to be looked on by woodmen as a perfect plague. The Brier is often confused with its near neighbour the Rosa rubiginosa or Sweet Brier. The leaves of this kind of Rose are rust coloured, the skin of the stem is of polished green, the thorns are small and numerous, the leaves are dark green and crinkled, and when rubbed with the fingers leave behind them an odour closely resembling that of a Reinette Apple. This Rose and its four varieties make but poor stocks, but they may, nevertheless, be used for grafting Pimpernel and Moss Roses, which have a certain amount of analogy with it. As far as yielding good stocks for Rose growing, all Briers in a wood are not alike. Those which grow in freshly-cleared parts are preferable to those found in the old underwood or under high trees; their stems, being always exposed to the light and air, are very strong, the tissues being firm and the bark hard, and they fear nothing from either the sun or the dry March winds, which are always fatal to subjects grown in the shade. In the young Brier the skin is bright green with a tendency to purple on the side exposed to the sun; the thorns, which are bent like the blade of a scythe with the point downwards, are unequally placed on the stem. In the third year the bark becomes grey and rough. Besides this, the old Briers which have been cut down close to the ground throw out vigorous young suckers, which grow faster than the trees and bushes surrounding them, and, being much taller than their neighbours, they produce perfectly straight stems. It is, therefore, in forest clearings of from three to six years old that we must look for our Brier stocks, but we must remember that, although uprooting them is a real benefit to the forest in which they occur, it is not always agreeable to the landowner, who naturally considers that he is the best judge as to what should be taken away and what should be left.

Uprooting Briers.—The labourer whose work it is to pull up the Briers ought to be provided with a pickaxe, a sécateur, and a hand-saw. He ought also to be given a good pair of thick leather gaiters, rising above the knee, to protect his legs from the Blackberry bushes and the Thorns. Somewhat luckily for the owners of woods, the Brier does not grow abundantly in many parts of the same forest; there are, however, quite enough to enable a clever labourer who knows how to choose his spot to collect from 150 to 200 stocks per day. As he uproots the Briers they are laid together in little heaps at the side of the pathway leading through the wood, the heaps being collected into larger ones of 150 each, and carried away by the labourer at the end of his day's work. When carried out of the wood the Brier stocks are, so to speak, in an unmanufactured condition; they have still to undergo the operations of trimming and sorting. These operations are not always performed on the spot; it is, therefore, advisable to wrap up the roots of the Brier stocks with the Moss found in their native habitat, and stow them in a cellar, or some other cool, dry locality. If these precautions are taken, and they are not difficult to fulfil, the Briers will stand a temperature of 9° Fahr. below freezing point, and may remain in this condition, while waiting to be trimmed and sorted, for a month or more without their ultimate healthiness being interfered with.

Trimming the Stocks and Preparing the Roots.—The roots of the Brier stocks have to be properly trimmed before they are fit for planting. The Brier ought first to be deprived of the more or less strong portions of the old stem from which it sprung, and should have a good healthy root allowed to remain. It is at the point of junction between the stem and the root, called the collar, that the new roots will spring forth. It often happens that these roots are already developed when the Brier is pulled up, and, being very delicate, have no doubt suffered in the process of extraction, in which case they must be cut off within ⅛ in. of the stem, or even close to it, according as the injury done to them is serious or not. The outermost bark of the root of the Brier is dark brown; the inner bark greenish-white, sometimes of a pinkish hue, at others purple. When the root is of an unnatural colour the skin should be lifted up; if the inner bark is found to be dark brown or black, and if in addition the fibres are very porous, we may be certain that the stock will not live. When several stems belong to the same stool, they are divided, so as to leave a good root to each stem. As many stems as possible must be kept; at the same time, if there be any need for it, weak stems must be sacrificed for the sake of growing nothing but vigorous stocks. The preceding operations are performed with the sécateur and hand-saw, taking care to pare down the rough edges of all the cuttings with the pruning-knife. The edges of the bark should also be smoothly rounded off. For trimming the roots a very strong sécateur, with long handles and without springs, is necessary. One of the handles is fixed horizontally in a heavy block of wood firmly fastened to the ground, the other being provided with a wooden handle similar to that of a chisel or screw-driver. The stock to be trimmed is held in the left hand and the free handle of the sécateur worked with the right. The dimensions of this tool are as follows: Length of the handles, 10 in.; thickness, ½ in.; length of the cast steel blade, 2¾ in.; width, 1½ in.; thickness, ¼ in.; length of the hook, 2¾ in.; thickness, ⅓ in. The price is from 12s. to 16s. Amongst the gathering we shall no doubt find a number of seedlings and suckers which have sprung up naturally. These stocks must have their own roots, which may be trimmed down by the pruning-knife to within 1-10th in. of their point of insertion. In trimming the stocks we must invariably cut away all the underground stems, which make their appearance in the form of buds and suckers. Fig 6 shows a stock of each kind, the cross lines showing the parts of the root which should be cut off. The buds spring out of the lower part of the stem, and are of a bright red colour and of a woody texture. The sucker, on the other hand, has a smooth bark, and is of a pale rose colour, or red, and in its general character it is more like a branch than a root. Both buds and suckers must be rigorously cut down to the point from which they spring, otherwise they are almost certain to grow into useless shoots that will only exhaust the stock instead of strengthening it.

Preparation of the Stem.—The rudimentary buds which make their appearance on the stem of the Brier stock should be cut off in such a manner that the whole length of the stem should be upright and smooth without any growths upon it. The last operation is to cut the stocks to the proper height, which allows us to divide them into four classes.

Sorting the Stocks.—The first, which includes "full stocks," properly so called, consists of the strongest Briers, of from 6-10th in. to 1¼ in. in diameter, and about 4 ft. 4 in. in length. The second class, or "half stocks," includes Briers of less diameter than 6-10th in. and only about 2 ft. 8 in. in height, that being the length proportionate to the vigour of the stock. The third class, called "bastard stocks," are too weak for half stocks, and are cut to a length of less than 2 ft. 8 in. The fourth class are called "dwarfs," and include those Briers which are too small to be included in either of the other classes. They are cut down to within 1 ft. of the root, and are used for grafting dwarf Roses. In order to cut the stocks to their proper lengths, gauges are used by the workman, the cutting, of course, being performed by a sécateur. They are thrown into four heaps as they are cut, and afterwards bound up into bundles of fifty stocks, and sent immediately to the nursery. With these four different sizes stocks of all descriptions can be supplied, whether for borders, circular beds, or clumps. So much for the ordinary operations of preparing the stocks; but we cannot refrain from recommending Rose growers to supplement them by covering the cut surfaces with the protecting wax before mentioned. The grafting wax will protect the stem from the effects of damp, which is apt to lead to the rotting of the upper part of the stem. When once this decomposition sets in it proceeds slowly but surely, and spreads upwards towards the graft, which it will ultimately destroy. The evil is sometimes not so great as we have represented, but in any case a dry, dead mass of wood is always found at the top of the stock, which soon becomes hollow, affording a refuge to the insects that ultimately prey on the graft. The application of grafting wax to the cut ends of the stocks is neither an expensive nor troublesome operation. It may be performed with the spatula, or, better still, by dipping the end of the stock in the melted wax as soon as it has been cut to the proper length.

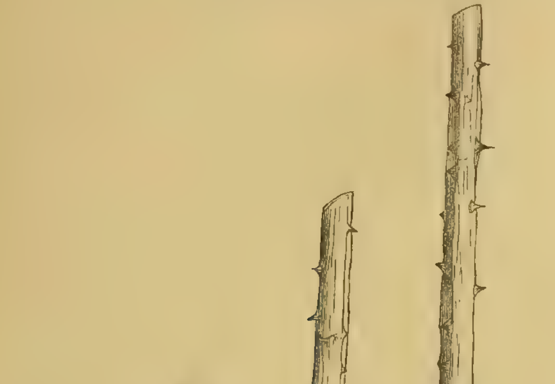


Fig. 6.—Trimmed Stocks.

Planting Brier Stocks.—These stocks are laid in by the heels if the weather is not favourable for planting; if, on the other hand, the weather is fine, the ground pretty dry, and all fear of frost is past, the Briers may be planted out in borders or elsewhere. We will suppose that the planting out takes place in spring, according to general practice, the collection of the stocks being made in the winter. Briers, however, can be planted out in the autumn if necessary.

Planting in Borders.—The ground is divided into borders 5 ft. 6 in. wide, the borders being separated by pathways 2 ft. 2 in. wide; the stocks are planted in rows 1 ft. 4 in. from each other, the distance between each Brier being 1 ft. 2 in. The row in the middle (the third) is planted with full stocks, the second and fourth with half-stocks, and the first and fifth with bastards or dwarfs. This plan of arranging the plants gives more light to the middle row, and greatly facilitates the operation of grafting, &c. This method of planting in borders is generally adopted in the environs of Paris, as it allows a large number of stocks to be placed in a limited space—a great advantage in localities where land is scarce and rents are high. Some growers object to this mode of planting on account of the stocks being too crowded, so that many of them will not take root for want of room, or because the grafts are liable to be broken off by careless or stupid labourers, so that in many cases there is nothing gained, and planting in the open ground is to be preferred.

Planting in Open Beds.—The soil of the bed having been properly prepared, the sides being, let us suppose, on the north, south, east, and west, we first of all lay down rows of pegs from the east to the west sides, the space between the rows being 1 ft. 8 in., between the pegs in each row 1 ft., and between the end pegs and the north and south sides of the bed about 6 in. The pegs are intended to show the places where the stocks are to be planted; the plantation is begun on the north side, the tallest stocks being used first. A cord is stretched between the first and last pegs, and a labourer makes the first hole with a spade at a distance of 6 in. from the edge of the bed; the hole should be from 6 in. to 8 in. deep, according as the soil is light or heavy. A second labourer, who carries the Brier stocks under his left arm, places one in the hole, leaning it lightly against the string, without, however, forcing it into the ground. The first labourer makes a second hole at 1 ft. from the first, filling up the latter with the earth he takes out, treading the soil firmly round the stock, and so on to the end of the row. The line of stocks is then made perfectly straight by treading the soil round their roots to the right or left, as the case may be. The planting out proceeds in this way, passing successively from full stocks to half-stocks, bastards, and dwarfs. The plantation, when completed, will have the heads of the stocks inclining gently from north to south, and under the best conditions for light and air. This method of planting seems to us the best, always provided that the extent of the ground and the number of the stocks do not allow us to devote a whole bed to each class. The Briers generally having but few roots at the time they are planted, we must encourage the formation of fresh rootlets by spreading over the beds a layer of deodorised night soil, or, better still, this valuable fertiliser may be placed in the holes before planting the stocks, their striking being then made almost certain by this simple precaution. The vigour of the growth of the stocks fully compensates for the extra expense of the manure.

After Treatment.—The after-attention to be bestowed on the plantations is the same, no matter what method of planting out has been adopted. It consists in turning over the ground three times during the first year, and in pinching off all useless buds and shoots. The first digging is generally performed immediately after the first pinching off, which generally takes place in May. The second should be in July, and the third in September. The number of diggings and time at which they ought to be performed varies greatly with the condition of the ground and the state of the weather since the last time the ground was turned over. For instance, if the turning over of a bed filled with weeds is followed by heavy rain, it will facilitate their growth, thus in part destroying the good effects of the operation. In this case it is better to wait until the weather is settled, and then give the ground a thorough forking. The weeds brought to the surface are soon burnt up by the sun. This operation should, however, be entrusted to a careful man, or the stocks will run great danger of being stripped of their bark, or otherwise injured by the prongs of the fork. Pinching off the useless buds and shoots is a very important piece of work, the object of the operation being to rear a stock with a certain number of vigorous shoots growing from its head, any or all of which will be fit to receive grafts or shield buds, besides being so symmetrically placed as to form a handsome head. At the same time we must not be in too great a hurry to destroy useless or badly placed shoots, as by so doing we may injure the growth of the stock. The shoots should be allowed to reach a length of from 1¼ in. to 1½ in. before they are pinched off. We may now choose the shoots which are to form the head of the future Rose tree. When the stock is strong and healthy we may allow three to remain, leaving only two, or even one, on those which are weaker. The shoots which are chosen should, of course, be on the upper part of the stem of the stock, and should, as far as possible, be in a circle and at equal distances from each other. Having made choice of the shoots to be preserved, the others are cut off with the pruning-knife close to the stem. The labourer whose duty it is to prune the stocks ought to precede him who turns up the ground, in order to prevent the freshly-disturbed soil from being trampled upon. He should also examine the foot of the stocks to see if they are throwing off any underground suckers, and destroy them if necessary. A sharp look-out, too, must be kept for the cockchafer grub amongst the roots of the stocks. We will now suppose that all our Brier stocks have been uprooted from their native soil and, for the most part, successfully transferred to the nursery ready for grafting or shield budding. Some of the stocks will no doubt have failed to take root, the mortality amongst them, as we have already stated, being sometimes as high as 50 per cent. If the directions given above, which are the result of thirty years' experience, are strictly followed, the loss may be diminished to one-half. Another precaution which may be taken to prevent loss is to daub the entire stock over with a mixture of clay and cow manure, an easy and cheap operation, which may be performed either immediately after the stocks have been trimmed, or just before they are planted out. Take equal parts of dry earth and dried cow manure, or one-third of earth, one-third of fresh cow manure, and one-third of clay, and mix them in a tub with sufficient water to form a thin paste. The stock should be steeped in this mixture and allowed to dry. The coating which it thus acquires remains upon it sufficiently long to protect it against the cold March winds and the heat of the sun in spring, and keeps the bark in fresh and supple condition, which is favourable to its growth. When the best shoots for grafting are not exactly at the end of the stem, they are, nevertheless, allowed to remain in company with the terminal shoot, which will help to draw up the sap and prevent that part of the stem which is above the choicer shoots from becoming dry and withered. After the grafts have taken the central shoot is cut off. When several shoots spring from the same point, the weakest are sacrificed and the strongest allowed to remain. When all the shoots on a stock are badly placed, the highest is allowed to remain to keep up the supply of sap; and at grafting time the stem is used for shield-budding, as we shall see further on. As already explained, pinching off ought to take place about the month of May, but the growth of the stocks must, nevertheless, be continually watched, in order to give the shoots which have been allowed to remain a fair chance of developing.

J. LACHAUME.

Rose de la Grifferaie as a Stock.—Mr. William Paul recommends the use of this as a stock, and certainly the growth made upon it in his nurseries, as contrasted with that on the seedling Brier or the Manetti, is very striking. This was pointed out in the account which was recently given of the Waltham Cross Nurseries in THE GARDEN (p. 255).

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—In the south of England it is absolutely necessary to grow Auriculas in a shady position, not under trees or in a place where they can be overshaded, but under a north wall or high, close hedge, with the back of the frames placed against them. Even in such a position, at midsummer the plants almost get too much sun and require to be shaded in the afternoon from, say, half-past one to between four and five o'clock. Early in August shading becomes unnecessary, and by the first or second week in October, or earlier if the weather should be dull and wet, the frames must be removed to an open position in which they will be exposed to the full effects of sun and air. It is difficult to keep the plants free from green fly during summer; fumigating with Tobacco smoke is injurious to the young leaves, and it requires great patience to brush the fly off with small camel's-hair brushes; by the middle of October the leaves are able to resist the effects of Tobacco smoke strong enough to kill the aphis. See that the plants are cleared from decaying leaves and weeds when they are removed, and that the ground where the frames are to stand is saturated with lime water to kill slugs and worms. Slugs are a great pest to Auricula cultivators, and at this season they are very troublesome; if there be any in the frames they must be looked for at night with a lamp.

Carnations and Picotees.—Growers of these are now busy emoving layers from their plants and potting them. This may be rone any time during October, but it is not desirable that it should de done earlier, as I have found that the plants when potted very barly do not succeed well during winter. It is well, too, for growers en different districts to be acquainted with one another, as a change iof plants from north to south, or from south to north, is beneficial to the plants, and this change is made most advantageously now. One grower in Bradford, let us say, wishes a change of stock; he writes to his friend in Essex, and offers to send him 100 pairs, and the southern grower reciprocates this offer by sending 100 pairs of similar sorts to Bradford. No time, moreover, must now be lost in obtaining any new sorts which it may be intended to purchase. Many wait until spring before they buy their plants; but I do not think that a good plan. The plants are much more easily removed now, and they do not experience any check to growth at this season. I find that they stand the winter best if no manure is mixed with the soil at the time of potting up the layers. A good compost consists of turfy loam broken up fine four parts, leaf-mould one part, and sharp sand one part. When potted, plunge the pots in some dry, light material in cold frames. I use 3-in. pots for one plant, and 5-in. ones for two.

Polyanthuses.—The treatment which these require is nearly akin to that of the Auricula, except that it is not usual to grow Polyanthuses in pots all the year round. They are turned out of their pots after they have flowered and planted in rich soil in a part of the garden not too much exposed to the sun. A good time to lift and pot them is in August or September, but many prefer not to disturb them until October. I shall not pot my plants until the middle of the month. Seedlings that were sown in July or August ought now to be pricked out from the seed pots; from twelve to eighteen plants may be potted into a 5-in. or 6-in. pot. The Polyanthus requires a rather heavier soil than the Auricula, and this is obtained by using less leaf mould and sand in its composition. I find that there are many autumn trusses of flower showing; these, of course, are pinched out as soon as they can be handled. When potted the plants must be placed under glass lights the same as Auriculas.

Dahlias.—Where these are cut down by frost it will be necessary to dig up the roots after cutting over the stem about 1 ft. above the ground. The stems sometimes contain water, which should be allowed to drain out by turning them upside down, and they may remain in that position for a whole day out-of-doors if the weather be favourable. When the roots are dry let them be stored away in a room for the winter. I have seen Dahlia roots much injured when placed near hot-water pipes in a Mushroom house. They do best stored in dryish sand in a shed, from which frost is excluded, and while at rest they ought not to be stimulated by artificial heat.

Hollyhocks.—Choice sorts ought to be taken up and potted before severe frosts sets in; the pots should be plunged in a cold frame, in which, indeed, the general collection ought to be wintered, but it is a good plan, and saves some trouble, if the frame be filled with some good friable loam, and the plants put out in that, planting them rather closely together, but not so close as to injure the growths. The lights may be kept rather close for a few days; afterwards in fine weather they may be removed, replacing them at night to prevent the plants being injured by a deluge of rain or cutting, frosty winds.

Gladioli.—The great difficulty with hybrids of the Gandavensis section is to get the roots sufficiently ripened bore the ground is deluged by the autumn rains, succeeded by sharp frosts. It is desirable to lift them before the stems are quite decayed, and a dry day should be chosen for the purpose. The bulbs should be separated from the stems as they are lifted and put into clean flower pots, with the label attached to each. I then place the pots containing them in a Vinery, from which the fruit has been cut, and plenty of air ought to be admitted to dry them. When dry store them in a fruit room, or any dry place, and do not allow frost to get at them. In the operation of lifting a number of very small corms will be found attached to each root, and if it be desirable to increase the stock these ought to be preserved. Each sort should be wrapped up separately in paper in a little dry mould or sand.

Pansies and Pinks.—Beds of these may now be planted in rich soil as has been described in previous numbers. It is also desirable to plant a few of each in boxes, and to to keep them in a cold frame to fill up any blanks that may be made during winter. Pansies intended to be grown in pots should now be potted into 4-in. or 5-in. pots to be potted again when the pots have been well filled with roots. The Pansy, as most of us know, likes a rich soil in which to grow, and the plants when potted should be placed in a cold frame near the glass.—J. Douglas.

Spring Gardening.—Wherever it is intended to carry this out, the arrangement of the garden should now be decided upon without delay; and everything, as far as possible, should be in readiness for replanting the beds and borders as soon as their present occupants have been removed. It is necessary that Hyacinths, Tulips, and other bulbs intended for this purpose should be planted as soon as possible, as well as the various species of spring-flowering herbaceous plants used for spring bedding, such as the different species of Aubrietia, which are nearly all suitable for this purpose; Arabis alpina, lucida, præcox, and purpurea; double Daisies of various kinds, all of which are most effective as profuse-flowering spring plants; Gentians, Hepaticas, Myosotis dissitiflora and azorica, double and single Primroses, Polyanthuses, Vincas, Violas, bedding Pansies, double and single Wallflowers, and others. Many hardy succulent plants, such as the Sedums, Sempervivums, and other species, may also be used with good effect in spring bedding; and, by their aid, the carpet style of planting may be adopted in spring as well as in summer. In arranging the spring-flowering plants for the various beds in the flower garden it will seldom be advisable to plant any of them with bulbs alone, such as the Hyacinth and Tulip, as this would necessarily leave the surface of the beds destitute of verdure for a considerable portion of the season. But a more satisfactory arrangement may be made, and a better effect produced, by planting the bulbs somewhat thinly in most of the principal beds at least; and, as soon as this has been done, by carpeting the surface with such plants as Aubrietias, Violas, Silenes, Sedums, and other suitable plants, a finished look is given to the garden which will continue to increase in beauty as the various bulbs are developed. Lawns and Grass belts will still require to be occasionally mowed either with the scythe or the mowing machine, and, together with gravel walks, will require frequent attention as regards sweeping and rolling—in fact, the broom or the sweeping machine will, for some time to come, be in constant request.

Herbaceous Border.—While the late autumn-flowering plants still gladden the eye and give interest to the herbaceous border, the great majority of its occupants have already had their summer growth levelled with the ground, or are in a condition for that operation. A word or two, as to what may be considered by many a very simple process, will not be out of place. Be it remembered that Nature's mode of removing the haulm is a gradual one, viz., by the ordinary process of decay, extending, in most cases, through the entire winter months. Admitting at once that, where neatness and trimness is an essential point, it will not do to follow Nature's lead too closely; nevertheless, we may take a lesson from her, and that, too, with advantage. The lesson is this—never to cut down too close to the ground, but leave sufficient length of the old stems that they may readily be bent to one side. Such stems are almost invariably hollow towards the base, and not unfrequently constitute channels whereby decay, owing to the continued presence or accumulation of water therein, is conveyed beyond the ordinary stem into the very heart of the root-stock. From this cause alone many a valuable herbaceous plant has been lost; therefore, though not absolutely necessary in all cases, it is well to act up to it as a rule. Another bit of advice, bearing on the same operation, is, that the knife used for the purpose should always have a sharp, keen blade. The supposition generally prevalent is that any old knife will do, but such is not the case. In many of the better class of herbaceous plants the buds, upon which depends the next year's floral display, are densely arranged on a somewhat fleshy root-stock immediately below the surface of the ground, nor is this root-stock always tough; hence, when a blunt knife is carelessly applied to the old decayed stem, the jerk intended to remove the decayed part is liable to break off the crown at the same time, and thus leave a blank in your border beauty for next year. In the wild garden this operation should always be left to Nature herself; let there be no cutting until a general clearance takes place in spring.

Indoor Plant Department.

East Indian Orchid House.—The non-pseudo-bulb forming section of Orchids, such as Phalænopsis, Vandas, Aerides, and Saccolabiums, do not require a long season of rest like most of the Dendrobes, Cattleyas, Lælias, Oncidiums, and many others. When they are treated so as to induce the necessary cessation of growth through the winter, it should not be done too suddenly by keeping the temperature up to the full height of the growing season, and a corresponding amount of moisture in the atmosphere until it is reduced all at once, or nearly so. In place of this, a gradual reduction should be made as the days shorten, especially in the night temperature, which may range some 5° to 6° lower than when the days were longer. There should also be a corresponding diminution in atmospheric moisture, which will still further assist the solidifying of whatever growth is yet made. This is essentially necessary, for such portion of leaf-growth in the above plants as is made under the shortened conditions of light existing through the autumn months will be of a much softer character than that which is formed earlier in the season, unless there be some counterbalancing effect produced, such as that consequent upon a drier state of the atmosphere. For a like purpose much less shading should now be used; in fact, after this time it may wholly be dispensed with for plants that have been grown under a regular course of moderate heat, moderate moisture, and no more shading than is absolutely necessary, except in the case of lean-to houses facing the south, where sometimes when the sun is very bright and there are any flaws in the glass, these will burn the leaves both late in the autumn as well as early in spring, when otherwise the plants would be in no way injured by the sun acting upon them; neither is it advisable to dispense with shading so early in the season with those Orchids that have been systematically treated to the heavy shading, and hot, stifling atmosphere that some growers consider necessary, as under such conditions the whole tissues of the plants are weak and watery, and little calculated to bear any extreme. As a matter of course, with Orchids, more than any other subjects cultivated under glass, it is necessary to be guided by the actual condition of individual plants, as where any particular species is duplicated to a considerable extent, which almost always occurs in large collections, there will be some plants of each kind earlier or later in their growth, as the case may be, according to the time at which they flowered. In houses that are a good length much may be done at this season to meet the requirements of the description of plants under consideration, placing those that are about completing sufficient growth at the coolest end of the house, where less moisture may be applied to the roots, reserving the warmest end for such as flowered and commenced growing later, for with these plants there is no completion of growth in the way that takes place with those that form pseudo-bulbs, the production and completion of which amounts to an ordinary season's growth; but with the plants now under treatment the growth is simply an extension of leaves, roots, and stems; consequently, there is no particular point in its formation to indicate where the treatment calculated to keep on the extension of the parts should cease; hence it becomes necessary to be guided by the season and the amount of growth that has taken place since their blooming. At the same time it is well to remind beginners in the cultivation of these plants that the thorough maturation of a moderate amount of growth is very much preferable to the extension of such as is of a weak, indifferently matured character. Where fixed shading, such as whitening or paste, is used, it is a very common occurrence to see this left on until late in the autumn, when its presence, through obstructing the light at a time when every ray available should reach the plants has a most weakening influence.

Calanthes of the vestita Section.—In most cases the pseudo-bulbs of these will be about attaining their full size, after which time I have found that they do better with considerably less water at the roots than when growth was in its most active state. The whole of the roots of these plants die annually; but upon their retaining vitality as long as possible, in a great measure depends the retention of the leaves; when these can be kept in a moderately healthy condition until the flowering is approaching completion, the plants not only bloom much better, but their appearance is very much enhanced; by a diminution of the supply of water when the pseudo-bulbs have attained their full size, the leaves will keep fresh longer, but nothing approaching a complete drying up of the soil must be attempted.

Mexican Orchid House.—The temperature here, both day and night, may with advantage be reduced some 5°, as well as a reduction of moisture in the atmosphere, with little shading, or dispensing with it altogether where the form and position of the house and the treatment the plants have previously been subjected to has been such as to enable them to bear the comparatively little sun that we may look forward to.

Miltonias.—These plants do not find nearly so much favour with growers as they did some years ago, yet there are many very beautiful species amongst them, such, for instance, as the best variety of M. Moreliana, usually known under the name of M. Moreliana atrorubens, producing, as it does, immense flowers in proportion to the size of the plant, of an intense deep reddish-purple colour, unequalled in its particular shade by any other Orchid. The flowers are of an enduring character, lasting good for a month, and blooming at the present season when Orchid flowers are the scarcest renders it a most desirable plant. The different forms of M. spectabilis are well worth more extended cultivation than they now receive. They are amongst the freest of free-flowering subjects. These Miltonias are plants that may be said to have comparatively little rest, for almost as soon as the blooming is over the slow development of their next growth commences. Like the majority of Orchids, they do not like disturbing oftener than necessary, but when the young growths have extended so far as to get beyond the confines of the pots they must either be divided or have larger pots, for if the roots have no soil in which to descend they will cling to the outsides of the pots, where they can receive no sustenance, except through the water given. In this way the growths are weakened. The time of potting will need to be regulated by the period at which they have bloomed and the extent of after-growth made; but when potting has to be resorted to, it should be done before the young growths have made any roots. They require considerably less water from this time through the winter season, but should not be kept too dry. In potting, keep the soil well rounded up above the rims of the pots. Small copper wire hooks I have found the best for securing them till the roots have got good hold of the new material. After flowering the plants should be subjected to a thorough cleansing, especially if there be any white scale about them, which insect is worse to eradicate on Miltonias than most plants, as it establishes itself under the scales with which their creeping stems are covered, and on the pseudo-bulbs inside the base of the leaves, where it is bad to get at without injuring the plants. Little brushes, such as the small ones ordinarily used by painters, made of camel's hair, in place of which they should be made of bristles, I have found the best for the removal of the scale. Miltonia candida is another autumn-flowering plant, now about in bloom, well worth cultivation, particularly the best variety M. candida grandiflora, as also one or two of the best forms of M. Clowesi, which likewise usually comes in about this time. The flowers of both these last long, and as they form elegant spikes are well adapted for cutting. After blooming plants of both want keeping somewhat drier than the first-named species.

Cœlogyne cristata.—Those plants of this that flowered early will now be about completing their growth and pushing up their flower spikes; the development of these takes a considerable time from their first appearance. They are rather impatient of water standing about them, consequently the syringe should not be used so as to wet the spikes, giving whatever water is needed with the ordinary pot. Plants the growth of which is so far advanced as is here indicated will now require less water, but they must not be kept so dry as many subjects. Examples of this most useful winter-flowering Orchid that bloomed, and therefore made their growth, later, must be encouraged to finish it up stout and strong, for the larger the pseudo-bulbs the greater the number of flowers they are able to produce.

Lælia Perrini.—This very beautiful autumn-blooming species will now be pushing up its flowers. The roots should be kept slightly moist, and a temperature maintained sufficient to fully develop the blooms, but as soon as they are expanded they should be stood in a position in the house where there is the least accumulation and condensation of atmospheric moisture, such as usually takes place near the end upright glass, where it often happens that the flowers soon after opening get spotted to an extent that would not occur if placed in the centre of the house.—T. Baines.

Conservatory.—There is no better time than the present for giving the inside of conservatories a thorough cleaning, as this can be done now before many things are brought in for the winter season. A general cleansing of this description has the double advantage of much improving the appearance of the house and also is conducive to the health of the plants, through the maximum amount of light that it secures. As the plants are returned to their places let each be well cleaned, as well as the pots and tubs or boxes they occupy, an operation which gives an air of order and cleanliness that goes a long way to compensate for a less display of flower than earlier in the season.

Stove.—Shading may now be dispensed with, and still further reduce the moisture both in the atmosphere and at the roots, as plants generally will now be approaching the season of rest. Cut back Ixoras and Dipladenias, and keep them drier at the root until they have broken afresh. If any roof climbers are grown here, which in a stove properly so called never should be allowed, as, however beautiful they may be in themselves, they exclude light to an extent that renders it impossible to grow well the far greater number of plants which ought to be found occupying the body of the house, they should now be well cut back, keeping them dry so as to discourage growth as much as possible.

Fern Houses.—The reduction in the atmospheric moisture recommended here for last month, with the decreasing warmth of the season, will have materially checked growth, and brought the plants into a favourable condition for a thorough cleansing, more especially from insects. Thrips, even with the greatest care, usually make their appearance. The plants, in their present state, are in the best condition to bear a good application of Tobacco smoke, which ought to be repeated sufficiently often to destroy the young brood as soon as it comes to life. Remove all dead or unsightly fronds. See that the drainage of all plants in pots or tubs is in good order. Ferns are water-loving plants, and it sometimes happens that the quantity of water they receive has the effect of choking the drainage, more especially if worms have got possession of the soil. If the water when applied does not percolate freely, it is an indication that the drainage is defective. Where such is the case it must be remedied at once, or the roots will perish.

Azaleas.—Late-blooming plants should by this time have thoroughly matured their wood, and should have abundance of air night and day, only closing the house when there is danger of frost. Complete whatever tying yet remains to be done. Any plants that are suffering from want of more pot room may yet be potted, but great care must be taken to make the soil equally firm as the ball of the plant, and the watering of such plants through the winter must be done carefully, as, if the new soil gets too wet, the roots will not enter it.

Indoor Fruit Department.

Selecting and storing soil for forming new Vine borders or for putting additions to old ones must not be neglected at this season. The best surface turf attainable should be taken to the depth of about 6 in. or 8 in. The older and fuller of fibres it is the better. When cut into square pieces and laid Grassy side downwards in mounds it is preserved in good order until required in the spring. When placed in narrow ridges the frost has a beneficial influence in mellowing such parts of it as may be of a clayey character. Here the most fertile soil for Vine growing is a substantial calcareous loam, obtained from the hill tops, where it is found here and there in small patches on whinstone. These patches, which have remained unmolested for ages, are rich in organic remains. As regards young Vines, such as were planted out during the past summer, if not already well ripened, they should be assisted to do so by means of a little fire-heat. Thin away all lateral growths from them, in order that the air may play freely about the buds; keep a vigilant eye on Grapes hanging, in order to see that none are decaying; in cutting, take them from the top of the house first, say half-way down the rod; the bunches at the bottom of the Vines always keep better than those at the top; this is owing to the moisture rising and settling at the top of the house, while the bottom is comparatively dry; when well ripened, it is surprising how perfectly Grapes will keep for months in the winter time if strict attention be paid to ventilation; see that abundance of air is given at the top of the house before sun-heat has induced moisture to rise; tardy ripening sorts of Grapes, such as Muscat of Alexandria and Gros Colman, may probably require a little fire-heat, in order to prevent the temperature from falling before 55°, and to ensure their perfect maturation.

Kitchen Garden.

If there be any doubt about the supply of Parsley being sufficient for the anticipated demand, there is yet time to transplant roots from the open ground into pots or boxes for use in January and February; and, even where there is an abundant supply well protected in the open air, it is always advisable to have some growing under glass for garnishing, as the leaves are usually fresher than can be obtained outside, especially during or after severe weather. It is generally after Christmas that this want is felt, therefore there is yet time, if it be necessary, to add to the stock under cover.

Globe Artichokes.—Cut over old fruit-bearing stalks close to the crowns, and remove the weakest of the shoots so as to strengthen those that are left, in order to cause them to stand the winter better and be more easily protected. From plantations made last spring some heads may be obtained at this time, and, if they are required for pickling, they should be cut when they are about 2 in. in diameter. If severe or unsettled weather set in, cut over all remaining flower stalks having heads on them, plant the stalks in damp sand in a cellar or shed, and cut off the decaying portion of the stalk every three or four days.

Beet.—This should now be taken up, the operation being performed with care, as the slightest injury to the roots will cause them to bleed, after which the fine dark colour so much esteemed is lost. They, on this account, should not have the tops cut off close, as with many vegetables the leaves are better twisted off by the hand. A dry day should be chosen, and the roots allowed to remain on the ground for a few hours before taking them to the root shed, in which place they may be allowed to remain for some days previous to their being placed in dry ashes, when they should be piled up in layers in the same way as that recently recommended for Carrots. The latest crop of Carrots will now be ready for taking in.

Planting Cabbages.—Another batch of summer Cabbages should now be planted; it is much better practice to plant twice, at intervals of about a month, than to make only one planting. If all goes well with those that were put out the earliest, they will be considerably in advance of such as are planted now, and it is desirable to try to have some ready as soon as possible in spring, otherwise there will be a blank between the late Greens and the first Cabbages. There is, besides, another contingency to guard against—the earliest-planted Cabbages take hold of the soil and commence growth whilst there is a good deal of heat in the earth and also in the air; this makes them grow freely, and in this state they are liable to suffer should a severe winter follow. The second batch put in, although they will be a fortnight later in the spring after a mild winter, are much better able to resist the effects of a severe winter of long duration, or the more trying vicissitudes of vegetable life—alternate frost and thaw. When these occur it frequently happens that few of the first crop of Cabbages escape; whereas, such as were planted somewhat later suffer comparatively little. At this time they should be put in as advised for the first batch, 2 ft. being left between the rows for both early and late kinds, the former 9 in. apart in the rows, the latter 12 in. A little soot and lime mixture should be applied to the roots of each plant at the time of putting out. The August-sown Cauliflowers will now be ready for putting into their winter quarters; for those that are to come in the earliest hand-lights are the best, as, when planted under these in the situations in which they are to remain, they do not require to be moved in the spring, as is the case when they are put in an ordinary garden frame for the winter. A hand-glass of the usual size will accomodate nine plants, five or six of which can, in the spring, be removed to the open ground. The ground should be well dug and enriched with manure, after which the lights should be put down, a space of 2 ft. being left between them, and each light should be pressed down upon the soil so as to mark the position the plants are to occupy. The latter should be put in 3 in. or 4 in. from the sides of the lights, dividing the space amongst them. Put in a little soot and lime to each, as recommended for the Cabbages, and dust the ground over if it is infested with slugs. Do not put on the lights until there is a probability of a sharp frost, as a certain amount of exposure renders the plants strong and capable of withstanding the cold of the winter. If there are no hand-lights available an ordinary one or two-light garden frame must be used. This will be all the better for being shallow, as a deep frame has a tendency to draw the plants up weakly. If the ground be heavy, dig in any light material, such as old potting soils of a sandy nature, or leaf mould, as the plants will move from it with better roots in the spring than if it was of a retentive nature; put in some manure, mixing it well with the soil. The plants should be placed 6 in. apart, and the surface dusted over with the lime and soot mixture. A narrow strip of ground should also be prepared at the foot of a south wall on which some Cauliflowers and Cos Lettuce may be pricked out. The latter may be put in at from 6 in. to 10 in. apart, according to the size of the plants. In the southern parts of the kingdom they will stand, with a little protection, in frosty weather, unless the winter be exceptionally severe. Here, also, dust well over with soot and lime. A frame should now be got ready, in which to sow Cos Lettuce for planting out in spring; an open, light situation ought to be selected for this, raising the frame at the back, so that the glass may slope considerably, to prevent drip, as success in keeping these late-sown Lettuces through the winter depends upon the surface being quite dry, otherwise, in severe weather, when the frame has to be kept closed, sometimes for weeks together, the plants are sure to damp off. It must face the south, and be filled with soil to within 6 in. or 8 in. of the glass, with some light, moderately dry, earth on the top; in this sow the seeds broadcast, sufficiently thick to allow for failures. If the soil be too dry for the seeds to vegetate, sprinkle with water, but use no more than is necessary. The light should be put on until the plants are up, when it ought to be drawn off on fine days, and tilted when there is any likelihood of rain, so as to keep them dwarf and strong. These autumn-sown frame Lettuces require a good deal more attention than any others during the year; but, where a continuous supply is wanted, they cannot be dispensed with, as their absence would cause a void between the earlier autumn-sown crops that come in the first in the season and the earliest spring sowings.

Extracts from my Diary.

Oct. 14.—Sowing Mustard and Cress. Putting in the last of the Calceolaria cuttings. Tying up Lettuces, and covering up Endive to blanch. Turning manure for Mushrooms. Getting manure and leaves together for making hotbeds. Gathering the last of the Tomatoes and hanging them up in Pine stove to ripen; gathering also Glou Morgeau and Knight's Monarch Pears.

Oct. 15.—Potting Echeverias; also old plants of Tom Thumb and Indian Yellow Pelargoniums. Thinning out Mignonette in pots. Salting out all the flint gravel walks. Looking over Cauliflowers and turning down leaves where required to protect the heads from frost. Hoeing among all late planted Cabbage, Endive, and Lettuce. Stacking away Carrots and Beetroot. Collecting leaves, cleaning walks, watering Pines, and tying them where required.

Oct. 16.—Sowing Canadian Wonder French Beans. Looking over cuttings, taking off the tops where required, removing dead leaves. Earthing up Celery when the soil is dry and in workable condition. Cutting back the heads of Yews, Laurels, and other shrubs where beginning to overhang each other. Gathering Easter Pippin and Lamb Abbey Pearmain Apples.

Oct. 17.—Putting in cuttings of Pentstemons and Antirrhinums. Clearing off flower borders, and getting them ready for spring-flowering plants. Filling up all pits and frames as they become empty with Lettuces and Endive. Making another Mushroom bed. Gathering last of Vegetable Marrows and clearing away the plants.

Oct. 18.—Potting various kinds of Pelargoniums. Planting spring-flowering plants of the following sorts, viz., Red and Yellow Wallflowers, Red and White Daisies, Iberis, Myosotis, Alyssum saxatile, Pansies, Nemophila, Saponaria, and Silenes. Fumigating Cucumbers. Clearing off late Peas, and stacking the best of the sticks for another year. Gathering Uvedale's St. Germain and Catillac Pears.

Oct. 19.—Potting Hyacinths, Narcissi, and Tulips. Getting cuttings of some of the tenderest plants into warm quarters. Looking over Grapes in bottles, and putting more water in such as require it. Putting haybands round Cardoons, and earthing them up. Cleaning up pleasure grounds and rolling walks where required. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

The Speediest Way of Growing Leeks.—This consists simply in sowing the plantation where it is to remain instead of transplanting and earthing up the plants like Celery. This has been my plan now for some years, and I think I can show as good Leeks as anybody need desire, though they are not as thick as one's wrist, but they are half as thick, or nearly 5 in. in circumference and well blanched. One bed supplies us nearly till Leeks come in again. Not having been transplanted the plants do not run to seed so fast in spring, and they are laid in behind a north wall to keep them from pushing. I never could see the use of monstrous Leeks, and I am sure many of the large examples which I have seen at the Edinburgh shows did not pay for the pains that had been bestowed upon them, and which might with great advantage have been expended on other subjects. In a cook's estimation a small Leek is just as good as a large one. The French market gardeners, with that rare aptitude for guaging the wants of their customers, know this, and they grow several dozen plants in the space in which our Leek growers grow perhaps one, but they are well blanched and quite good enough for their purpose. I saw piles of them at the Halle Centrale, not one of them much thicker than my little finger. The Leek is an important crop in the little Paris market gardens, and one that appears to be hardly thinned out at all.—J. S. W.

FRENCH BELL BOILERS AND COPPER PIPES.

I like the material of which these are made better than their design—at least, of the boilers. Bell boilers, but not known by that name, have been in use in this country for a long while, though not now manufactured extensively. We have four in use here that have been fired constantly for about twenty years, and they are yet in good condition, except one which has leaked for some time back. They are nearly the shape of those figured in The Garden (p. 296), and are set and flued in the same way, but they have not the outer "water jacket," which they are better without. We do not, however, like them, because they take a long while to get up heat, and are equally long in cooling down again, and cool pipes are often desirable on bright days. The reason they do not heat so quickly is because the flame or heat can only act upon them sideways, not directly, and the reason they take so long to cool is because they cannot be damped down when required, like a saddle boiler, unless the fire is pulled quite out of the "bell," which is troublesome work, and productive of waste. It is different with the saddle boiler of any kind. No matter how big the fire may be, if you wish to cool the pipes, in the event of a bright day, you have only to push the cool-rake over the fire, then put a few spadefuls of ashes on the top, shut the bottom door and open the top one, and you at once set a cold current through the flues which cools the boiler quickly. Another fault of the bell boiler is that it does not readily burn any other fuel than coke or coke and coal mixed. Coal alone cakes in the boiler, and does not fall down as the coke does. If I am not mistaken, the three boilers referred to in The Garden were exhibited in the "Heating and Lighting" department (French) of the Paris Exhibition; but I saw no boiler of French make that could be considered equal to some of our modern English ones; indeed, some of the apparatus exhibited were of an old pattern. I liked, however, their light copper pipes, which, if they could be employed in this country without greatly adding to the cost, would, in my opinion, be better than iron. They are no thicker than tin, and appear to be put together in a simple and expeditious manner. All the boilers are also of copper; no iron ones were exhibited. Could any one tell us the difference in the cost of iron and copper pipes? Copper is said to heat quicker, which means that it also cools sooner, which some say is a disadvantage, but that is an open question. It is as often desirable to cool the pipes quickly as to heat them quickly. The French copper pipes seemed to be made up of short pieces soldered together, and fitted, when set up in the hothouse, by means of light handy clips and india-rubber. J. S. W.

Double Roofs for Glass Houses.—These are frequent abroad, and no doubt they are useful in districts where the winter is severe and where large hothouses have to be kept warm enough for tropical plants, but they are always ugly and complicated, and should be avoided at any risk. The roofs built in this way are apt to be far from clean, and there is a good deal of heavy mechanism required. Better, so far as we are concerned, fight it out with one perfectly sound roof, clear and clean.

Paraffin Oil as an Insecticide.—I believe we have at last found a cheap and perfectly effectual cure for bug and scale—the two worst enemies with which plant growers have to contend. I was recommended to try the paraffin by a well-known cultivator, who said it acted like magic, and I did try it, and found it to do so. In a very short time, almost as soon as it touches them, it seems to turn bugs into a kind of buttery substance, and scale syringes off in half-an-hour after application. I syringed about fifty large plants of Eucharis amazonica with it, some Gardenias, Crotons, a large Stephanotis, and other plants, in many cases with complete success. There is nothing like it. Add a good wine-glass full to an ordinary garden pitcher of soft water, keep stirring it up constantly and syringe the plants the while, and in five minutes or so afterwards syringe off again with clean water. I have not tried it on Vines or fruit trees, owing to the necessity of having to syringe it off the fruit soon afterwards, or there is danger of it tasting the berries. I should think it would be a safe and excellent cure for the Gooseberry caterpillar.—J. S. W.

Geographical Gardening at Munich.—We have lately seen an elaborate and painful attempt to illustrate geographical botany by living plants at Munich. It was the most painstaking of the kind we have seen—all sorts of poor, scraggy plants being brought out of the houses and arrayed in the open air to represent this country and that country, and even divisions of each country. But it was merely a ridiculous libel on the vegetation of each country that was to be seen. This is one of the things that botanic gardens would do well to leave to the books. A really truthful drawing in black and white of some well-chosen spot would do more to show what the vegetation of a district was than any amount of this kind of exposition of pot-sticks, scraggy plants, confusion, iron, glass frames, and pedantry. What the botanic gardens of the future will probably be constrained to do will be to fairly show the vegetation of their own country, not in a pedantic, but in all desirable and beautiful ways. And when they have succeeded they may attack the rest.

A TRINIDAD FOREST.

Canon Kingsley in his "At Last" thus describes one of these forests: "Soon you will be struck by the variety of the vegetation; and will recollect what you have often heard, that social plants are rare in the Tropic forests. Certainly they are rare in Trinidad; where the only instances of social trees are the Moras (which I have never seen growing wild) and the Moriche Palms. In Europe a forest is usually made up of one dominant plant—of Firs or of Pines, of Oaks or of Beeches, of Birch or of Heather. Here no two plants seem alike. There are more species on an acre here than in all the New Forest, Savernake, or Sherwood. Stems rough, smooth, prickly, round, fluted, stilted, upright, sloping, branched, arched, jointed, opposite-leaved, alternate-leaved, leafless, or covered with leaves of every conceivable pattern, are jumbled together, till the eye and brain are tired of continually asking, "What next?" The stems are of every colour—copper, pink, grey, green, brown, black as if burnt, marbled with Lichens, many of them silvery white, gleaming afar in the bush, furred with Mosses and delicate creeping Filmy Ferns, or laced with the air-roots of some parasite aloft. Up this stem scrambles a climbing Seguine (Philodendron) with entire leaves; up the next another quite different, with deeply-cut leaves (Philodendron lacerum); up the next the Ceriman (Monstera pertusa) spreads its huge leaves, latticed and forked again and again. So fast do they grow, that they have not time to fill up the spaces between their nerves, and are consequently full of oval holes; and so fast does its spadix of flowers expand, that (as indeed do some other Aroids) an actual genial heat, and fire of passion, which may be tested by the thermometer, or even by the hand, is given off during fructification. Beware of breaking it, or the Seguines. They will probably give off an evil smell, and as probably a blistering milk. Look on at the next stem. Up it, and down again, a climbing Fern (Lygodium) which is often seen in hothouses has tangled its finely-cut fronds. Up the next, a quite different Fern is crawling, by pressing tightly to the rough bark its creeping root-stalks, furred like a hare's leg. Up the next, the prim little Griffe-chatte plant has walked, by numberless clusters of small cats'-claws, which lay hold of the bark. And what is this delicious scent about the air? Vanille? Of course it is; and up that stem zigzags the green fleshy chain of the Vanille Orchis. The scented pod

The Ceiba tree (Eriodendron anfractuosum).

is far above, out of your reach; but not out of the reach of the next parrot, or monkey, or Negro hunter, who winds the treasure. And the stems themselves: to what trees do they belong? It would be absurd for one to try and tell you who cannot tell one-twentieth of them himself. Suffice it to say, that over your head are perhaps a dozen kinds of admirable timber, which might be turned to a hundred uses in Europe, were it possible to get them thither: your guide will point with pride to one column after another, straight as those of a cathedral, and 60 ft. to 80 ft. without branch or knob. That, he will say, is Fiddlewood (Vitex); that a Carapo (Carapa Guianensis), that a Cedar (Cedrela), that a Roble (Machærium); that, larger than all you have seen yet, a Locust (Hymenæa Courbaril); that, a Poui (Tecoma serratifolia); that, a Guatecare (Lecythis), that an Olivier (Bucida), woods which, he will tell you, are all but incorruptible, defying weather and insects. He will show you, as curiosities, the smaller but intensely hard Letter wood (Brosimum Aubleti), Lignum vitæ (Guaiacum), and Purple heart (Copaifera). He will pass by as useless weeds, Ceibas (Eriodendron) and Sand-box-trees (Hura crepitans), whose bulk appals you."

ANSWERS TO CORRESPONDENTS.

Woodsia alpina.—Let "Canonicus" (p. 319) take a sod of good, fibrous peat, reduce it by hand into small pieces, rejecting the very fine particles, so as to leave for use the fibrous portion only. Intermix with this a quantity of small stones, or broken pieces of potsherds; add a good proportion of white sand, and mix the three well together. In potting use smallish-sized pots, in proportion to the size of the plants; have the pots carefully drained, and pot firmly; then place the pot with the plant in a pot a size larger; this ensures permanent moisture round the roots. Set them in a small frame with a west or east aspect, and shaded from the mid-day sun; keep them close during the day, and give air at night. If for a conservatory, place a bell-glass over the plant, so as to ensure a moist temperature for the fronds.—R. P.

Chasselas Grape Vine.—Can plants of this Vine for growth on an outside southern wall, as at Fontainebleau and other places in France, be procured in England? The Chasselas is a white Grape of remarkable sweetness.—H. R., *Christchurch.* [The Chasselas de Fontainebleau Grape is grown in this country under the name of Royal Muscadine, which may be procured from any nurseryman.—B.]

Cutting Down Evergreens.—If "M. Q." (p. 319) intends cutting down his evergreens to the ground, then the months of January and February may be as suitable as any other time. But if (as I am inclined to think) he merely wishes to diminish the height or dimensions of the plants, the present would be a better time than the depth of winter to perform the operation, as this would give time for the wounds to heal before very severe frost was likely to set in. In the case of the Laurustinus, which is more tender than the Portugal Laurel, the best time to cut it back would be as soon as it had flowered, and just when it was about to commence the formation of young growth, say, early in May, and this would also be the best time to cut back the Portugal Laurels.—P. G.

Transplanting Evergreen Oaks.—If "Exempt" (p. 275) will cut in his Oaks to nearly bare poles, removing all the side branches to about 6 in. in length, leaving no leaves, and also root-pruning if need be, I think he will find that he can safely transplant Evergreen Oaks of large size. I saw this plan pursued by Mr. John Bain, of the College Botanic Gardens, Dublin, many years ago, and was surprised at the success he met with; the trees broke out in healthy buds all over the main stems, and became in a few years beautiful symmetrical specimens. I have tried the same plan with Cork trees, and with perfect success, transplanting them in spring.—W. D. Hemphill, M.D., *Oakville, Clonmel.*

Celery Maggots.—These I find get between the tissues of the leaves and commit great havoc. They may be easily seen on holding up the leaves to the light. Is there any known remedy for this pest, which is very general in this neighbourhood this year?—A Subscriber. [What you have sent are the larvæ of the Celery fly (Tephrites onopordinis), which in some seasons do much mischief to the Celery crops. When Celery is infested with the larvæ the leaves become blistered and turn yellow, and as the grubs are underneath the blisters, they may be crushed between the finger and thumb. The grubs, when full grown, descend into the earth, and remain in the chrysalis state until the following spring, when they give birth to the fly, which, in due course, deposits the eggs on the leaves. Therefore, to prevent the attack of the pest next year, leaves badly infested should be removed and burnt, to prevent the grubs attaining their full development. Mr. Rose, of Byfleet, having been for some years troubled with Celery fly, filled a 36-gallon water-barrow with sufficient water to dissolve two 1-lb. boxes of Gishurst Compound, mixing with 1 lb. of Pooley's Tobacco Powder, and filling up the whole with boiling water, stirring all well together. The mixture, after being allowed to stand for some twenty-four hours, was used to water the affected Celery plants, a watering-pot with a very fine rose being employed for the purpose. The plants, having been well saturated with this mixture, were then examined, and the grubs which had burrowed into the leaves were all found to be dead. The crop, too, seemed to be greatly improved, the mixture having evidently acted not only as an insecticide, but as a fertiliser. About three weeks after he repeated the same treatment with another crop, with exactly the same results.]

Tropæolum speciosum.—Can you inform me how to induce seed of this Tropæolum to germinate? I have given sound, well-ripened seed of it to my friends, but neither they nor I have ever succeeded in raising young plants from it.—J. E. C. [Sow the seeds as soon as they are ripe in light loam, leaf-mould, and sand in a pan or box; place them in a pit or frame, and keep the soil moist, but not wet, until the plants make their appearance in spring. The careful division of the old roots is much the best and easiest method of propagating this Tropæolum.—W.]

Francoa ramosa.—Amongst notes from Kew (p. 302) mention is made of this plant, which is described as bearing racemes of pale, rose tinted flowers. We have for many years grown a plant under the above name answering to the description given, excepting that the flowers are pure white. I should like to know if our plant is wrongly named, or whether its being flowered under glass would account for the difference in colour.—C. E. Pearson. [Francoa ramosa has white or pink flowers, and being grown under glass may influence it in some way; it has a short stem, and in this respect differs from F. appendiculata, which is stemless, and has flowers deeper in colour than the others. F. sonchifolia has also, like F. appendiculata, a short stem, but its leaves are sessile and not stalked as in that species; its flowers are rose-coloured. All three are natives of Chili.—G.]

Parsley Grown for its Roots.—I notice in some Austrian towns what appears to be Parsley grown for the sake of its roots—sometimes very badly, other times well, the roots being nearly as large as fair-sized Parsnips. Has it any peculiar value? and what is the best way of preparing it for use?—E. G. [This Parsley is chiefly grown in North Germany for the sake of its roots, which attain a large size. The latter often measure from 12 in. to 15 in. long, and from 2 in. to 3 in. thick. They bear considerable resemblance to those of the Parsnip. Fine roots of it might have been seen in Covent Garden Market last season. They are cooked and prepared in various ways; like Parsnips, Celeriac, Salsify, and Carrots, they give a fine flavour to soups. Roots taken up in autumn, and stored in a mild, well-ventilated place, will afford a good supply of leaves during the winter. It should be sown in deep ground in spring, and thinned to from 5 in. to 10 in. apart, and the leaves should not be cut if large roots are required. Keep the ground clean in summer, and harvest the roots in November; if not wanted, the roots may be wintered in the open ground. This Parsley is seldom cultivated in England, where, however, it might be tried with advantage.—D. Guiheneuf.]

Souvenir de Malmaison Carnation.—This Carnation is strongly recommended in The Garden (p. 221) as being valuable both for decorative purposes and for cut flowers. I regret, however, that I am obliged to state that I have been compelled, through unfavourable results, to have the plants carefully taken to the rubbish heap after a trial of several years, during which time I devoted special attention to its culture, anxiously hoping that I should be able to find a remedy that would prevent the pods from bursting, which they have always done with me just before the flowers should open. This is an evil that has, in my case, rendered this Carnation worthless.—J. J., *Co. Cork.* [This is one of the largest Carnations in existence; the petals, indeed, are too numerous to open without bursting the calyx. If "J. J." happens to be amongst those who object to Carnation dressing, he will not be able to grow this variety well. The calyx always splits before the flower opens; to prevent this he must slit the calyx down one-third of its length from the base of each segment, and, as a further precaution, the calyx must be tied round with a strip of matting or waxed linen thread. There are always a few badly-shaped petals, which may be removed by a pair of tweezers. If "J. J." will do this before putting the tie on he will have a grand flower.—J. Douglas.]

Names of Fruit.—*P. S.*—You will find the information you want in another column.—*W. H. G.*—1, Marie Louise; 2, cannot be named with certainty.

Names of Plants.—1, Chrysanthemum fœniculaceum (in flower), the other is probably C. frutescens; 2, Asplenium cicutarium; 3, Aspidium coriaceum; 4, impossible to determine. *J. B. R., Stamford.*—We cannot name your plant from leaves only; send it when in flower. *J. M. Bosanquet.*—The drooping flowers of Meconopsis simplicifolia measure from 2 in. to 3 in. in diameter, and are of a violet-purple colour. *Anon.*—The fungus is a button-specimen of Agaricus rachodes, a variety not always safe for the table. *X. C.*—9, Picea balsamea; 10, Pinus sylvestris; 11, Picea cephalonica; 12, Pinus pinea. *G. Beard.*—Arum Dracunculus. *H. J. Ross.*—Sarcanthus filiformis.

Question.

Caraguata Zahni.—Could any of your readers tell me how to treat this plant so as to get it coloured more or less like the specimen figured in the "Botanical Magazine?" I have grown this plant for the last three years alongside with Caraguata musaica and tessellata and the two varieties of Tillandsia Lindeni, all of which do magnificently, whilst C. Zahni has proved itself nothing but an insignificant weed, growing and flowering vigorously, but scarcely showing any colour at all.—Istambol.

THE KITCHEN GARDEN.

TOMATOES UNDER GLASS.

Tomatoes out-of-doors have again in many places proved an entire failure this season. The wholesale manner in which the half-grown fruits have been attacked and rendered useless has been a serious disappointment to many, and ought to teach us to make the most of every spare corner under glass where a few plants could be accommodated. Many such places may be found where, with a little ordinary care, a crop of fine Tomatoes might be depended upon, as I have never yet seen or heard of a single fruit under glass being attacked with the disease; and, what is more, a good supply is kept up until late in the season. I could have gathered nearly a bushel in Christmas week last year from such places, and hope to do the same again this year. Tomatoes are highly esteemed here; I therefore try to make their season as long as possible. I do not grow many plants, having repeatedly proved that one good plant properly attended to is worth twenty half-starved ones. My earliest supply, from the end of May to July, I get from pots in the early Vineries. I need not describe the treatment which they receive, as it is the general crop about which I wish to speak. Now for this, I have only six plants planted out against the back wall of a late unheated Peach house; they are planted singly between the Peach trees, and occupy the vacant space that will eventually be covered with them as their growth extends. The Tomatoes were planted in May, and were carefully trained and stopped in the usual manner, each plant occupying now a a space of 70 sq. ft. or 80 sq. ft. I have not kept an account of the number of fruits gathered, but the crop has been a very heavy one, and the plants promise to keep up a good supply of fruit for months to come. I may safely say that the fruit would average about thirty dozens on each plant, and fine fruit too. I have come to the conclusion that if I have only room for one plant under glass I will never again be troubled with any out-doors, and I would strongly recommend others to do the same. The sort I have grown this year is Hathaway's Excelsior. It is the handsomest and most prolific variety I have ever grown. I saw some good Tomatoes at the late Crystal Palace Show, but none to beat Excelsior.

Denne Park. H. Harris.

TRANSPLANTING AUTUMN-SOWN ONIONS.

I make one sowing of Onions only any time between the middle and end of August, having the ground in a proper condition to receive the seed being, I consider, of more importance than dates in regard to any kind of cropping. I select a piece of the poorest ground I can on which to sow, which I do generally after a crop of Potatoes in open quarters. In my case the Potatoes receive a very light dressing of manure in spring, and often none at all. In this way I neither coddle the plants nor encourage them to make rank and tender growth by stimulating them with manure; this, in my opinion, is a mistake in the case of young crops that have to stand the vicissitudes of winter. The less sap they contain and the harder their fibre the better do they withstand severe weather. I sow in lines, not too thickly, 1 ft. apart. On looking over my notes I find that last year I sowed on Aug. 18, on a bit of the very poorest land in the garden, and I transplanted on March 6 this year, on a bit of heavily-manured ground, and I do not believe that a dozen "bolted" bulbs could have been found among the crop, which I considered the best that I had ever grown, and no attention whatever was given it after being planted beyond keeping it clear of weeds. From this crop I exhibited a dozen bulbs at the Oswestry District Show, held there Sept. 6. They measured from 15 in. to 18 in. in circumference, and weighed from 1½ lb. to 2 lb. each, or nearly 1½ stone imperial the 12 bulbs. For these I received the first prize. The bulbs were perfect in shape, and attracted much attention, if one may judge by the groups of visitors that gathered round them discussing their merits and demerits; they were of the Tripoli class. I do not put this forward as an extraordinary result, as doubtless many of your readers may have surpassed it, but merely as a confirmation that good Onions may be grown by following the old beaten track.

Halston, Oswestry. J. Fairweather.

Autumn Cauliflowers.—These, with us, have not been a very satisfactory crop, so large a percentage of them coming as they do with malformed heads. The best variety we have in use is Veitch's Autumn Giant. I have observed the same to occur before, and probably it is owing to the plants receiving a check during their early stages of growth.—J. G.

NEW *V.* OLD MELON AND CUCUMBER SEEDS.

In a report of the meeting of the French Central Horticultural Society, printed in The Garden lately, it is stated that the subject which heads this paper was discussed, and some of the members expressed the opinion, based upon long practice, that new seed was the best, all things considered, to sow, an opinion, I have no doubt, which many English cultivators will corroborate, though it is well known that it was the practice of old horticulturists, as it is of many modern ones still, to sow old seeds of Melons and Cucumbers in preference in the belief that such produced plants that want "less to live," as they expressed it, and were more fruitful. So impressed were some cultivators with this notion, that when they could not procure old seed they used to convey the new about in their pockets for months before sowing, in the conviction that it dried it more quickly, and produced the same effect as age. I confess to having entertained the same opinion at one time, but long experience has convinced me that, as the French cultivators state, new seed is the best, particularly in the case of Melons, and I never sow seed that is more than two years old, and the previous year's seeds are preferred. I do not dispute the fact that old seeds produce less vigorous plants, but, everything considered, they are not the most fruitful. Plants from old seed are often so feeble that they can with difficulty be raised. They will not stand the hardships of early forcing like plants from fresh seeds and full of vigour, and they are the first to go off with disease, or become the prey of insects. As to their retaining sufficient strength and good foliage to produce a second or third crop of fruit, I should think very few instances are on record, but new seed will do this frequently, and the second crop is generally heavier, and it can be got in less time and with less trouble than by raising successive plants. Melons are rather an important crop with us, and this has been our experience. The effects of age upon seeds is to destroy its vitality, and old Melons, or Cucumbers, or Marrow seeds, though they may look well enough when sown, either rot in the soil or produce feeble plants; but, besides, there is no excuse for employing old seeds to produce moderately vigorous plants. The cultivator has his plants always under control, and he can prevent them making too strong growth by giving them a poorer soil and less of it. He can grow his plants in pots, for example, and treat them just as he has a mind. Fertility is, however, more a matter of sorts than of new or old seeds. There are some Melons which are fertile, and others that are not; indeed, the greatest difference exists between varieties in this respect, and it would be well if the fact had more weight with both growers and raisers of new varieties. A Melon may be good flavoured and all that, but if it be a shy bearer it is almost valueless, and that is the character of half the new sorts that are sent out. J. S. W.

Johnstone's St. Martin's Rhubarb.—This is a very fine variety, strong in growth, and excellent in flavour, not being nearly so acid as some varieties. I would strongly recommend those who contemplate planting Rhubarb during the ensuing season to include this as a standard variety—good for all purposes.—J. G.

Cabbages for very Early Use.—With spring Cabbages, earliness and tenderness, the result of rapid, unchecked growth, is preferable to mere size. In fact, few people care about a very large Cabbage at any time, as, according to my experience, size is generally obtained at the expense of delicate flavour. Now everybody has warm corners about their premises somewhere, or can easily extemporise some shelter. Into one of these warm spots dibble a quantity of Atkins' Matchless Cabbage, 6 in. or 8 in. apart each way; have as much depth of soil as possible, keep the surface freely stirred as often as it happens to be dry, and after Christmas, just when they appear to be folding up their leaves to form a heart, give one or two good soakings of liquid manure or house sewage. This crop, of course, is only intended for the first cutting, and as fast as they are cut the stalks should be pulled up, and the ground prepared for some other crop that will appreciate the warm position better than the Cabbage will when the hot days in spring arrive. A very large number of dishes of sweet early Cabbages may be obtained from a small space in this way. There is yet time to plant out a batch, although it had been better done last month.—E. Hobday.

The Secateur, delineated in the last number of The Garden (p. 314), is a very inferior tool to the one which I use, which has two cutting blades, and does not crush any branches cut by it. I procured it in Geneva. I never saw one in France, not even among the collection of garden tools, &c., in the Exhibition.—J. E. C.

No. 361.] SATURDAY, OCTOBER 19, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

GRAPES WITHOUT FIRE-HEAT.

ALTHOUGH it is well known that good Grapes may be obtained without the aid of fire-heat, still there are, perhaps, few who fully realise to what degree of perfection they may be brought without that aid if only ordinary attention be paid to a few essential, yet simple, details. I am induced to make these remarks not only from past experience, but more especially from having, a few days ago, paid a visit to a neighbour, in whose garden I saw a house of ripe Hamburgh Grapes grown without fire-heat, which so pleased me, that I venture to furnish a brief description of it, and also give a few explanatory notes of the treatment which the Vines receive, hoping that those who have hitherto failed to produce good Grapes by this method may thereby be induced to make another attempt.

The house in which they are grown is a small span-roofed one, facing east and west. At the north end is a wall, the top of which reaches within 18 in. of the ridge of the house, thus allowing a triangular ventilating shutter of that size being introduced at that point. The length of the house is about 24 ft., width 11 ft., and height at ridge 9 ft. The sides are about 2 ft. high, and roughly boarded from end to end (I say roughly because no attempt has been made to plane or fit them closely, there being a continuous opening along each edge throughout their full length). The roof is a fixed one, the glass, about 15-in. squares, being glazed on to the rafters. The only door is at the south end, and this, in addition to the shutter at the opposite end, forms, with the permanent air spaces along the sides already mentioned, the only means of ventilation. The Vines (twelve in number) are planted inside; and as the house is supported on Oak posts, there is a free way for the roots to ramble outside. The inside border, which is devoted solely to the Vines, was prepared when they were planted, seven years ago, by simply forking into the ordinary garden soil a small quantity of stable manure to the depth of 2 ft. This, in short, was the only preparation the border received. Owing to the excellent natural drainage, concrete, rubble, and all similar details of preparation were dispensed with. The outside borders received no attention whatever, and are in precisely the same condition as they were before the house was erected, being annually cropped with salads and other dwarf vegetables. There is, however, on the western side a one-light frame, raised about 2 ft. 6 in. high on a manure bed, for the purpose of raising tender annuals in the spring, but this does not appear to have exercised any perceptible influence on the Vines, as those situated nearest to it are not a whit better than those on the eastern side, which are completely isolated from such apparently favourable conditions. The Grapes are uniform in size and quality, with one slight exception, and this occurs on a rod situated close to the end wall, where a few of the bunches are somewhat larger than the rest, and the berries present in a marked degree that distinctive "hammered" appearance so indicative of perfect finish. Such is the house; now for the treatment.

I have already stated that the inside border is entirely devoted to the roots of the Vines; and the same remark equally applies to the house. For the Vines it was built, and for them only is it used. The inside border receives twice during the growing season a thorough soaking with liquid manure—first, as soon as the Grapes are properly set, and again when they are about half swelled; with these two exceptions it receives no water beside what it gets from the syringing which the Vines receive early in the afternoon on fine days in warm weather up to the time the Grapes begin to colour, after which no moisture in any form is applied. This constitutes the sole root management. The ventilation is constant rather than copious, the chinks along the sides admitting sufficient air in cold weather and during the early stages of growth, the object being at this period to keep the atmosphere dry and cool. As the season advances the wooden flap is used, and in hot weather, and as the Grapes approach maturity, the door is also opened. Strict and timely attention is paid to the proper thinning and regulation of the shoots, leaves, and fruit, the object being to distribute each thinly and regularly over the whole roof, at no time allowing an undue accumulation of either in any part of the house. The bunches are regulated according to the strength and vigour of the Vines, the average weight of fruit being about 1½ lb. to every 18 in. square. Early thinning is practised, and it is done in such a manner as to prevent, when ripe, "jamming" on the one hand, and "looseness" on the other. Having stated these few simple rules of practice which constitute the sole method of treatment, I will just say that this house cost in erection £20; and if the crop this year were valued at 2s. 6d. per lb., fully one-half more than that sum would be realised. I have seen this house each year for the last four years, when it has always presented the same satisfactory appearance. The Vines are vigorous, the foliage green and healthy, and the wood brown and perfectly ripened; there are no signs of spider, mildew, or shanking; the bunches are even and symmetrical; the berries are large, black, and luscious, covered with a beautiful bloom, and without a speck or stain upon them. Altogether, this house is most satisfactory.

To recapitulate, the following seem to be the elements of success: 1. Vines only are cultivated. 2. Dryness in the inside border and atmosphere during the early and late stages of growth. 3. Moderate, yet constant, ventilation and careful conservation of sun-heat. 4. Judicious and timely thinning and regulation of both branches and fruit. T. C. W.

PRUNING BUSH FRUITS.

THE pruning season being close at hand, a few words on the subject may not be unacceptable. The Gooseberry, though undoubtedly one of the most popular of fruits, is nevertheless seldom managed as well as it ought to be. It may often be seen in the form of a stunted, starved bush, crowded with old, Moss-grown, unfruitful wood; or as a great, overgrown, ungainly bush, with nothing in the shape of fruit-bearing wood about it. In a general way, both these incongruities arise from mismanagement. Another form of mismanagement may be found even in some well-kept gardens, where the bushes are annually pruned into some symmetrical form, regardless of their fruit-bearing properties. The Gooseberry will grow and succeed well in almost any soil, but it does best, undoubtedly, on deep, rich alluvial deposits. Grown in such soils it sometimes becomes, as regards size, a tree. Given a good suitable soil and healthy plants to begin with, there ought to be no difficulty in keeping Gooseberry bushes always in a shapely form and bristling with strong, clean, healthy fruit-bearing wood. It is no uncommon thing in many gardens to follow the pernicious practice of cutting the young wood back to two or three buds—a system decidedly wrong, because it does away with a large amount of fruit-bearing wood, and, also, because the Gooseberry, being naturally addicted to making spurs, this system induces it to make many that have eventually to be removed. To avoid this, it is necessary to remove entirely all superfluous wood and to leave the leading shoots quite two-thirds of their length. At the same time all overcrowding must be avoided. Bushes treated in this manner rarely fail to produce heavy crops of fruit of the finest quality. It will also be found that they will bear well up to the very tips of the previous year's growth, an important advantage in cases where fruit is grown for profit.

Red and White Currants, as a rule, produce fruit of finer quality when spurred close in than when the wood is left at greater length. Therefore, the most satisfactory way of pruning these is to cut the current year's growth back to two buds. In places where sparrows do not pick out the fruit buds Currant bushes may be pruned as soon as the leaf falls; but where these little depredators are plentiful it is perhaps as well to defer pruning until spring, unless, indeed, the bushes can be protected from their ravages by means of netting. Nothing is more common, particularly amongst cottagers, than to see Black Currants spurred in the same manner in which Red or White ones are. A worse mistake could not be made. Our method of pruning these is to entirely remove all the old and worn-out wood, also any superfluous young wood, always keeping an eye to the shape of the bush. The fruiting wood left is not shortened at all, or cut in any way, the great object being to have as great a quantity of strong, short-jointed wood as possible without overcrowding.

Raspberries ought now to have all the old fruiting canes removed, in order to allow a free circulation of light and air through the plantation, without which it is useless to expect the wood to ripen or the fruit buds for the ensuing year to mature. After the leaf has fallen the young canes will have become hard and firm, and will be in a fit state to be shortened. The length will have to be determined by the operator; it should be regulated by the growth which the plants have made, as should also the number of canes to be left. Where the growth is vigorous from five to seven canes, from 5 ft. to 6 ft. high, may be left; these may be slightly twisted round each other and bound at the top with a piece of Willow. The twisting causes them to break more regularly than they otherwise would do. Of course where Raspberries are grown as espaliers this twisting is unnecessary. TYNEDALE.

AUTUMN TREATMENT OF STRAWBERRIES IN POTS.

The way in which Strawberries fruit in spring depends greatly on the kind of treatment to which they are subjected in autumn. The finer the crowns, and the better ripened they are now, the better will be the results when they come into fruit. During last month and this they cannot have too much sun and light, and should they have been previously growing in a shady place they will have all the more need of such assistance. We generally set them on an elevated spot, and we have sometimes even erected a rough deal stage on which to place them, and that with satisfactory results. Of course, no weeds, runners, or anything else that will shade the crowns in the least, are allowed to grow in or about the pots, and the latter are not packed closely together, but are set a little distance apart in order to allow the air to circulate freely about them. Manure water, in a pretty strong condition, is given two or three times a week, when watering is necessary, but for weeks sometimes in wet weather they never get or need a drop from the watering-pot. When this happens, it is a good plan to sprinkle a little guano or soot on the surface of each pot and let the rain wash them down to the roots. Such treatment about this time ensures good plants, which will always fruit well, provided they are not spoiled during winter. It is during that season that many make mistakes with reference to their Strawberry plants in pots. It is a common practice after November to stack them up so as not a drop of wet can reach the soil, and if this be not done they are put into frames or houses and protected by glass. To such an extent is this often carried, that, by the time the plants have to be brought in for forcing, the crowns, roots, and leaves are about half the size which they were in autumn, and, when shrivelled up in this way, they are not in half such good condition for producing a full crop of fine fruit as they were before they were put under cover in autumn. This covering up and protecting is the very worst thing that could be done with Strawberry plants in pots, a fact which any one who doubts this assertion can prove. The best crops of Strawberries in pots which I ever grew, and the finest which I ever saw any one else have, were produced by plants that were allowed to stand out in the open air in winter until they were placed in heat for forcing. Thus treated, the soil and leaves were kept moist, similar to plants growing in open quarters. When frost seems likely to break the pots, a little straw or dry Fern may be spread over the plants at night, but should always be removed during the daytime; and protecting from wet, snow, or anything else should never be attempted. CAMBRIAN.

Absorbents for Fruit Rooms.—In the remarks on fruit storing (p. 307) Mr. Newton states that chloride of lime is used as a dessicant, and seems to doubt the result; as there appears a strong possibility that a mistake has been made, and that chloride of calcium is the article meant, I would call the attention of those interested to the fitness of this salt for the purpose named. Being a permanent salt, it gives off no vapours of chlorine, while the unstable compound known as chloride of lime is valuable only for the facility with which it parts with its chlorine. The use of chloride of calcium for preserving the delicate balances used in laboratory work from rust, by placing it inside their cases is proof of its harmlessness, while the facility with which its absorbed moisture can be driven off by the application of heat, thereby rendering it again fit for use, undoubtedly places it at the head of the list of absorbents fit to use in a fruit room. A dish of strong sulphuric acid would also prove efficacious, but it labours under the disadvantage that a distillation would be necessary to render it again ready for use.—LONDON STONE.

Grapes from the Open Air in Nottinghamshire.—I herewith send you two bunches of Chasselas de Fontainebleau (Royal Muscadine) cut from a Vine about seventy years of age, growing in front of a house not far from Newark. Unfortunately, before I knew of the existence of the Vine the main crop had been gathered, and the accompanying samples are, I am assured, not considered up to the average excellence. They are, however, very good, as you will see; well coloured and ripened. The present tenant has taken crops from the Vine regularly for forty years, and this season he does not consider an exceptional one as regards the crop, but he had gathered, up to a week ago, 112 lb. from the Vine, not to speak of the fruit still hanging when he sent me the bunches in question. The Vine has a stem about as thick as a man's leg.—J. SIMPSON, *Wortley*. [The bunches sent were large in size for outdoor fruit of this variety, quite ripe, and of good flavour.]

Standard Gooseberries and Currants.—I have read with interest the remarks (p. 325) on this subject. Standard Gooseberries and Currants have been cultivated here for many years, as I found them here upwards of twenty years ago when I took charge of the gardens at this place. Our system is to select good, strong, long cuttings, to pick out all eyes to within two or three at the top, and to plant the cuttings and train them to stakes. The following year we cut them back to the required height, and afterwards yearly prune the heads into good shapes. The height is usually about 3 ft., and some of the heads measure from 5 ft. to 6 ft. through. Such trees are very suitable for planting beside some of the main walks. The Red Warrington, Rough Red, and Early Yellow are some of the best sorts for standards, and the Currants should be free-growing kinds.—J. GARLAND, *Killerton, Exeter*.

Avenues of Fruit Trees.—Where, in certain parts of Bohemia, the cultivated fields are hedgeless and the trees all gathered on the hills around, it is a common practice to plant fruit trees on each side of the main roads. Lately Plum trees bordering some of these were laden with fruit, which any one passing could easily gather, but the fruit was apparently untouched, and is carefully guarded when ripe where necessary. Such fruit trees do not, of course, completely shade the road, but they make it a little more endurable during very hot weather. In some cases, but not often, two rows of fruit trees are on each side of the road, and in this case there is more shade, especially for the pedestrian walking between them. Some such plan might perhaps be carried out in some of our chalk districts where the roads are often hot and bare.

Netting Melons.—I think cultivators generally, and Melon growers particularly, will agree with me that no Melon is perfect unless it is well netted, and I find from many years' experience that the best-flavoured Melons have the least network upon them; I speak of the green-fleshed section. Victory of Bath ranks amongst the best as regards flavour, but it is often smooth-skinned. This season I have been trying, and I am happy to say that I have succeeded in putting on the surface of a Melon a very fine network, and that by a mode so simple that I am constrained to lay it before your readers. When the Melons are about half-grown, I turn up a pin's point and gently stroke the fruit, first into quarters, and then I fill in between these with a series of small strokes. I have now a house of Melons naturally nearly all plain; I have netted several of them, but I have left some for comparison; those we have netted are simply unique, while fruits of the same variety not netted look commonplace beside them.—R. GILBERT, *Burghley*.

The Apple Crop in Kent.—Although this is by no means a good season for Apples generally, they are abundant in this neighbourhood, and Apples that would be considered a luxury in many parts of the country are here not considered worth sending to market. There is such a general outcry about the scarcity of home-grown fruit that one would think our growers were not alive to their own interests in letting so valuable an industry pass into the hands of foreigners. But, if railway fares, market expenses, and labour leave but little for the grower, it is clear that we must have cheaper transit and better means of communication with consumers, for at present it is a positive fact that the only places really well supplied with fruit and vegetables are our large centres of population. In rural districts devoted to Corn growing the inhabitants seldom see an English-grown Apple offered for sale, while Oranges from distant lands are offered in every window. Reform is slow, even in our most urgent necessities of daily life.—J. GROOM.

NOTES OF THE WEEK.

Lilium neilgherrense.—A fine display of this beautiful autumn-blooming Lily has lately been on view in several of the London nurseries. It is by some considered inferior to L. longiflorum and L. eximium, and if it flowered at the same time of the year as those kinds it would not probably be thought so much of as it is at present. Its great value lies in the fact that it flowers at a season of the year when other Lilies have gone out of bloom, and by good management strong bulbs might possibly be kept back for associating with the Chrysanthemums in November. Its scent is delicious without being overpowering, and altogether it constitutes one of the most valuable Lilies in cultivation.

The Pterocarya in Vienna.—This fine-leaved tree is often seen here, its foliage in mid-October being still of a rich dark green and very handsome. In its foliage and habit it is wholly distinct from any other tree we grow, and it is curious that it has not been more extensively planted in England. Some vigorous young specimens have the shoots like lance-shafts seen all their length coming straight from the stem. Its somewhat low and spreading habit prevents an idea from being formed as to its uses as a forest tree, but as a garden and pleasure-ground tree it is of the highest value.

A New Autumn-flowering Crocus.—In the Kew collection may now be seen an addition to the list of autumn-flowering Crocuses under the name of C. Elwesi, a native of Smyrna, but in its present condition it so closely resembles the ordinary C. sativus, that it need not be sought after, except by those who aim at making a complete collection of the cultivated species of this interesting class of plants.—A.

Aster Curtisi.—This forms another addition to the list of cultivated varieties of this very numerous family; but it is deserving of special notice, as it is a very desirable kind, being allied to the fine A. grandiflorus. The heads are about 1 in. in diameter, with numerous reflexed scales below them. The colour of the outer florets is pale violet, the centre being creamy-white. It grows about 3 ft. high, with ovate and toothed basal leaves, those of the stem being very small and pointed. It is very floriferous and now in full beauty; it possesses one desirable point, *i.e.*, having the majority of the blossoms expanded at the same time.—W.

White and Rose-coloured Anemone japonica.—It is worthy of note that the white-flowered Anemone japonica lasts in flower for a much longer period than the rose-coloured kind. Large beds of each kind planted side by side in an open position in Messrs. Rollisson's nursery at Tooting began to flower at the same time, viz., about two or three months ago, and whilst the rose-coloured kind has now for some weeks been completely flowerless, the white variety is still fresh and covered with blossoms.

Jacaranda mimosæfolia as a Standard.—Well-grown plants of this, having a clean stem from 18 in. to 24 in. in height, and crowned with a bushy head of deep green, finely-cut, Fern-like leaves, are amongst the most attractive objects, in the way of ornamental-leaved plants for dinner-table ornamentation, which can be cultivated. This plant is now largely grown in some of the London parks and gardens, and examples of it planted out in that way might soon be induced to assume the form just mentioned if taken up in autumn and potted.

Violets in Autumn.—Visitors to Covent Garden Market might almost be led to imagine that it was spring instead of autumn, judging by the number of baskets of blue Violets that may be seen at every turn. I observe that wherever young runners of the Czar and similar sorts have been planted or have established themselves, the blossoms are abundant and fine, but when left in old-established clumps no blossoms are visible; therefore, any one wishing for Violets early and late should take the trouble to replant young runners on good, fresh soil in May; they will afterwards be amply rewarded both by the season of bloom being lengthened and by the size of the individual blossoms.—J. G.

Plumbago capensis as a Pyramid for the Flower Garden.—We have been much struck with the appearance of open and free pyramid bushes of this favourite plant 7 ft. high in the gardens at Vienna. Every shoot has borne many flowers, of which the last were visible in mid-October. The comparative scarcity of really good blue flowers for the open-air garden in autumn ought to make these bushes all the more valuable; besides, the tall bushes, with their lovely crop of flowers, would be a novel feature in the garden. Inasmuch as this Plumbago has been flowered in the open air about London as an edging plant, there would probably be no difficulty as regards climate, tall, well-developed plants, like those we mention, being more likely to flower freely than young dwarf plants. This plant is never seen to advantage unless when so grown that the flowers hang naturally and freely. Nothing can surpass it against a pillar, but as pyramids it is as beautiful. Of course, the plants should be grown indoors and prepared for flowering in the open air throughout the summer and autumn.

New Coleuses.—One would almost have imagined that this class of plants had had its day, considering the number of new and attractive kinds which have been raised from time to time. Mr. Bull has now, however, in his nursery several entirely distinct species which will, when crossed with other kinds, no doubt, be the means of bringing out an entirely new and distinct race of these useful and easily-cultivated plants.

Oncidium tigrinum.—Amongst all Orchids now in flower in the London nurseries none are more beautiful than this. It is easily grown. Its flowers are exceedingly attractive; they last for a long time if kept in a moderately dry, genial atmosphere, and their perfume is equal to that of the sweetest of Violets.

Lapageria rosea superba Out-of-doors in Cheshire.—In the gardens of Mr. Stephen Williamson, Copley House, Thornton Hough, Cheshire, there is now in bloom a magnificent specimen of Lapageria rosea superba covering a wall 14 ft. high and 18 ft. in length. The plant has now over 300 blooms on it, and is also beset with innumerable successional buds.

Cyphokentia macrocarpa.—This is a truly handsome Palm at this season of the year, its gracefully arching, feather-shaped crimson and bronze-coloured fronds forming a striking contrast to those of older growth, which have assumed a deep green hue. When introduced amongst fine-leaved Crotons and similar plants it is one of the most effective of fine-foliaged plants. We lately saw fine examples of it in Messrs. Rollisson's nursery at Tooting.

Lychnis coronata grandiflora.—I have had for some years a charming plant of this Lychnis which bloomed with me in perfection his summer. Lychnis coronata is figured in vol. vii. of the "Botanical Magazine," but my plant is a bright salmon-pink, not red-lead, as there represented. It is not safe to consider it hardy, as far as my experience goes, but it is an excellent window and pot plant.—K. L. D.

Dendrobium bigibbum at Chelsea.—A good display of this, one of the most beautiful of Dendrobes, is now to be found in Mr. Bull's nursery at Chelsea. Dozens of plants of it arranged in groups bear long graceful spikes of pretty rosy-pink blossoms and unexpanded buds. Altogether, we counted eighty-four fully expanded flowers, and there are yet quite an equal number of buds to open. It is a plant which keeps long in bloom, and it flowers not only from the ripened pseudo-bulbs, but also from young shoots. On some imported plants we counted over twenty dried flower spikes, clearly proving that it is a profuse bloomer. It is not by any means a new plant, but it had become almost unknown to cultivation until it was reintroduced, an event which happened a year or two ago.

October-blooming Border Flowers.—The collection of cut flowers of hardy border plants shown by Mr. Parker, at South Kensington on Tuesday last, served to illustrate what a fine display of blossom can be obtained in our gardens at this season of the year, after the plants generally used in flower gardens have long since gone out of bloom, by planting well-selected hardy plants. Where cut flowers are needed, and there are no glass houses in which to grow them, by planting choice hardy plants, such as those alluded to, and of which further particulars will be found in another column, not only may a large quantity be had, but such a variety as no indoor plants can supply at this season, and that without any more trouble than merely procuring the proper plants for the purpose, planting them in deep, rich, sandy soil, and keeping them clear of weeds.

New Public Park for Newcastle.—At a meeting of the Newcastle-on-Tyne town council a letter was read the other day from Sir Wm. Armstrong, in which he offered to present to the town 26 acres of land, adjoining the 22 acres recently purchased by the Corporation, for an east-end park. The land is worth about £20,000. This gift was accepted, and it is proposed to call the park the Armstrong Park.

A Gift to Sheffield.—It was announced at the meeting of the Sheffield town council the other day that the Duke of Norfolk had set apart three pieces of land as recreation grounds for the people of Sheffield. The land is situated at Parkwood Springs, Carlisle Street East, and Beighton Lane districts, where thousands of working people will be able to use these open spaces. These grounds, which are upwards of twenty-six acres in extent, have been given to the corporation on condition that they be preserved as recreation grounds for the people of Sheffield for ever.

Viola stricta alba.—Blooms of this Violet have been sent to us by Mr. Ware. It is pure white with a yellow eye, large in size, and very desirable, especially at this season of the year.

NOTES FROM KEW.

Hardy Shrubs.—The Strawberry tree (Arbutus Unedo) and its varieties are now amongst the most handsome of all hardy shrubs; during the present month and November their lovely burden of blossoms and beautiful Strawberry-like fruit render them peculiarly interesting and charming. The typical plant is well known, but the following varieties are not so often seen as their merits deserve. A. Unedo macrophylla has larger, bolder foliage than the common Strawberry tree; its leaves are, however, quite similar in outline, and the panicles of flowers are also nearly identical. A. quercifolia, another white-flowering variety, has leaves with sinuated margins which almost warrant its name of Oak-leaved. A. rubra has the leafage and habit of the type, but panicles of beautiful red blossoms; this is a very free-flowering and valuable shrub. A. Croomi seems to be a stronger grower than the last, and has rather larger, much more deeply serrated leaves and large panicles of beautiful red, wax-like blossoms individually larger than those of A. rubra; this probably is the finest of all the varieties of A. Unedo. Colletia cruciata, a leafless Chilian shrub, has peculiarly flattened, spinous branches, the upper portion of the plant being covered with a profusion of small, shortly belt-shaped, white flowers; except in the southern counties—where, however, it will not succeed in very open, exposed situations—this singular-looking shrub will need the protection of a wall.

Hardy Herbaceous Plants.—A Mexican perennial, Mirabilis longiflora, is at present attractive on account of its long, tubular, viscid flowers, which are white with a deep violet-purple eye; these are not the only colours owned by this pretty plant, the blossoms of some individuals ranging from white to pink and violet. Cheiranthus mutabilis, a native of Madeira, is a Crucifer, which, both on account of its beauty and its prolonged flowering season, is a most desirable plant; when first the flowers open they are white, but a short time suffices to change them into a violet-purple colour. Aster Chapmanni, a United States perennial, is one of the most distinct and handsome of the Michaelmas Daisies; it grows about 5 ft. high and is an extremely floriferous kind, being totally covered with lavender-blue flower-heads. So pretty is this sort that a friend—an enthusiastic collector and cultivator of hardy herbaceous plants—declared that if he were restricted to six Asters, A. Chapmanni should be one of the six. A. Drummondi, from the Southern United States, is a very fine species about the same height as the last; its graceful sprays, covered with small, pale lavender flower-heads, being very useful for cut flowers. Neja gracilis, from Mexico, and N. falcata, a South American sort, ought not to be passed over without mention; they are the most charming of all the dwarf Composites now in blossom, and their fine golden yellow flower-heads have been very freely produced at all times within the last four months. Two or three Himalayan Polygonums are amongst the most striking of all border plants still in full beauty. P. amplexicaule grows about 3 ft. or 4 ft. high, and its spikes of deep rosy-red render it a conspicuous object even at a distance. Quite similar in habit and stature is P. oxyphyllum, which, however, has white blossoms. P. vaccinifolium, a very lovely creeping sort with small neat foliage and numerous spikes of red flowers, is one of the most charming of all the species of this genus for cool, moist spots in the rockery and open border. As a pot plant, too, for cool house decoration, few plants are prettier. P. chinense grows about 2 ft. high, and is of interest both horticultually and botanically; its pinkish flowers and fleshy coral red fruit are most attractive. Tanacetum fruticosum, with its small yellow flower-heads arranged in much-branched, lax panicles, grows about 2 ft. high, and attracts attention now that most herbaceous plants are dying or dead. Convolvulus mauritanicus, which is now covered with its blue, saucer-shaped blossoms, should not be omitted; as a border plant it seems to do even better than when cultivated in pots. Helianthus orgyalis, from the United States, grows about 8 ft. high, and forms a striking object; its tall stems—which are unbranched, except at the summit—are thickly clothed with narrow, arching, drooping leaves which impart an effect to the plant not possessed by any other kind of Sunflower; the golden-yellow flower-heads are most freely produced.

Stove Plants.—Aphelandra cristata, an old favourite, is at the present time the most gorgeous stove plant in flower at Kew; the foliage, which is a rather dull green, cannot compare in beauty with that of several more recently introduced kinds, but the large spikes of blossoms—glowing orange-scarlet in colour—would vie with those of any of the other Aphelandras. Of all the fifty species or more of the genus Crinum, none are more beautiful than the West African C. Forbesianum; it is, indeed, one of the finest Amaryllids ever introduced. A recently imported specimen has been one of the most striking of Kew plants during the last week; it has an enormous bulb with a stout scape about 12 in. long, which bears an umbel of thirty blossoms 8 in. in length; each of the six segments (4 in. long) has a deep rosy-red band running down its centre.—†.

RAPID GROWTH OF CANNAS IN IRELAND.

In May of this year I obtained from a leading London nurseryman a couple of plants under the name of Canna iridiflora hybrida, said to be a great improvement in size of bloom and brilliancy of colour on the fine variety known as C. iridiflora (of which good figures appeared in vol. xlv. of the "Botanical Magazine," t. 1968; vol. viii. of the "Botanical Register," t. 609; and vol. x. of Loddige's "Botanical Cabinet," t. 905), and imported from a Continental firm. Each plant consisted of a single stem, from 18 in. to 2 ft. in height. Early in June each plant was put out of its pot into the centre of a bed of ordinary garden soil, without any special preparation, the surface of one bed being covered with different varieties of Lobelia Erinus, that of the other with bedding Pelargoniums. They soon commenced to grow very rapidly, and to throw up additional shoots of great vigour and substance from the root, of the young leaves of which, when in a folded-up state, the slugs and snails seemed very fond of eating holes therein, which, when the leaves expanded, had all the appearance of lady's pierced embroidery work. The number and vigour of these shoots exceed anything I have ever seen of the kind, one plant having now no fewer than seventeen stout stems and the other thirteen, varying in height from a few inches to 8 ft. 5 in., the height of the tallest stem, which ends in a bloom-spike, which, I may add, as to colour and size, is an entire disappointment, being of a small size and of a dull, insignificant buff colour, instead of the brilliant deep crimson, large-sized flowers that this improved variety was announced to have. It seems evident, in fact, that the foreign firm, having more orders then it had young plants to supply, made up the number with offsets of some inferior variety, the plants sent to me being those received from the Continent, and, of course, unproved by the London firm which sent them out. The foliage is very handsome when fully developed, closely resembling that of a Musa. Boscobel.

Mentzelia ornata.—In reply to "V." (p. 332) perhaps you will permit me to state that I have not attempted to flower the above-named plant under glass, as it would require considerable space for its proper development. In the open ground success appears to depend on the seed being early sown the first season, so that the young plants have a fair chance of becoming strong and sturdy by the end of the summer. This ensures early development the second season, which is essential to an early production of its grand flowers. It must be admitted, I fear, that our climate is not so favourable to its growth, in the open ground as could be desired. The arrival of autumn generally finds the plant covered with flower buds in various stages of growth, and which, of course, are destroyed by frost or damp. I have read in the "American Agriculturist," somewhat to my astonishment, that in the State of New York, or not far from its borders, the seed of this plant is sown in the open ground and the resulting crop of seedlings left exposed the following winter. If this plan could be adopted on this side of the Atlantic, it is possible that the plant would bloom at an earlier period of the summer than it now does.—W. Thompson, *Ipswich*.

Fuchsias amongst Ivy.—"A. D.'s" bed of Fuchsias carpeted with Ivy looks well on paper, but I am afraid that when it comes to be worked out in practice it will be found to be a bed of Ivy minus the Fuchsias. The first season, perhaps, the Fuchsias might do fairly well, but after the Ivy had got established, owing to its being a gross, insatiable feeder, it would take good care that the Fuchsias got little of either the manure or water that might be applied. I know nothing more exhaustive than Ivy, and, as a rule, we never see weeds of even the grosser kind growing on Ivy-covered ground; when once it takes possession it holds it against all-comers. Even in woods we never see any but bulbous plants growing amongst it, and here, after the leaves have fallen off the trees, the autumn and winter rains prove sufficient to penetrate its leafy coat and enable the bulbs to perfect their season of growth and no more. There are many more surface-rooting plants with which to carpet, if the beds must be treated in that way; but why carpet at all? A dense, leafy covering might, and no doubt would, do much towards protecting the collars of the Fuchsias, but why not protect the whole plant? It can be done in this way: After the first frost has denuded, or partiallly denuded, them of their leaves, choose a dry spot of ground in a sheltered, out-of-the-way place, excavate a shallow trench of sufficient size to hold the number of plants you have, take them up and lay them in it heads and roots until all are packed away; then cover them over with sufficient straw to keep out frost, and either thatch with the same material or cover with mats to ward off rain; or, better still, cover with wooden shutters. Let them remain here until all danger from frost is over; then take them out and gradually expose them to light. One of the advantages of this plan is that they come into flower much sooner than killed-down plants, and another is that you can have other plants in the beds during the winter and spring.—T. Smith, *Newry*.

GARDEN DESTROYERS.

THE ONION FLY.

(ANTHOMYIA CEPARUM.)

THE grubs of this harmless-looking little fly are one of the Onion grower's greatest enemies, for at times whole crops of Onions, Leeks, Garlic, and Shallots are almost entirely destroyed by them. As they live singly or only a few together within the bulb of the Onion, which they eventually destroy, it is impossible to check this insect when once the Onions are attacked, as any means taken to destroy them would kill the Onions which were not infested. Some persons advocate strewing the beds with powdered charcoal as a means of preventing the fly from depositing its eggs on the plants, leaving a portion of the bed in its ordinary condition; the fly will in preference choose the roots on this portion on which to lay its eggs; these can then be destroyed. This plan is, however, by no means always successful. The best means of reducing the numbers of this insect is to at once remove and destroy by burning or deeply burying (merely throwing them on to a rubbish heap is of no use) any roots which may be attacked by them. These may be easily known by the leaves drooping, turning yellow, and emitting a tainted smell; if a few of the scales are removed the grubs will easily be seen crawling about inside. The Onion fly is a small, two-winged insect belonging to the same family (Muscidæ) as the common house fly. It makes its appearance early in the summer, and may be found throughout that season in several generations. The female lays her eggs at the base of the leaves of the Onion, and the young grubs when hatched immediately eat their way through the outer leaves and work themselves into the bulbs, which they commence to feed upon and soon destroy when full grown. They either assume the chrysalis state within the root of the decaying Onion or descend into the earth, and there undergo their change. During warm weather the perfect insect emerges from the chrysalis in about a fortnight. Later in the season, however, the insect remains in a chrysalis state during the winter, the fly not appearing till the beginning of the next summer. It is probable that the flies from the chrysalides which are found in the Onions make their appearance in the same season, whilst those from the chrysalides buried in the earth do not appear until the next. The flies are about 3-10ths in. long and 6-10ths in. across their wings; they are of an ashy-grey colour, sparsely covered with fine hairs. On the back of the male are a few black stripes. The wings are tranparent and iridescent with brownish veins. The grubs, when fully grown, are about 3-10ths in. long and are white, fleshy, smooth, and shining; they have no legs, and are of a peculiar conical form, the body terminating in a point at the head and very abruptly at the tail, just as if a portion of the grub had been cut off. Round the edge of this last joint are eight small, fleshy points. The chrysalides are oval and about the same size as the grubs, but somewhat shorter; they are reddish-brown in colour, and are composed of several joints.

S. G. S.

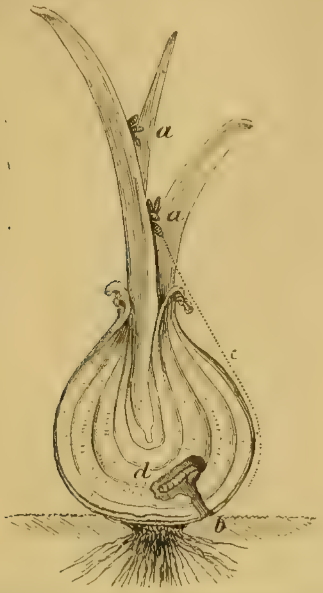


Fig. 1.—Section of Onion, showing the position of the eggs (*aa*) and direction (*c*) in which the larva (*d*) enters the bulb (*b*).

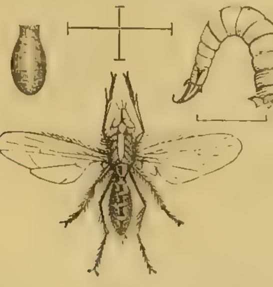


Fig. 2.—Onion-fly. Larva, chrysalis, and perfect fly; all magnified.

Indelible Ink.—The receipt (p. 315) for making ink I doubt not answers the purpose very well, but it appears to me unnecessarily troublesome. Many years ago a friend gave me a simple receipt for ink for writing on zinc, which I have constantly used since. It is 12 to 16 grains bichloride of platinum dissolved in 1 oz. distilled water. If kept corked, a small bottle will last many years. The labels (zinc) must, of course, be cleaned before using. This is readily done either by rubbing with fine emery paper or using the solution of oil of vitriol you recommend. But my ink requires no preliminary sprinkling of the labels with gum sandarach or after treatment with hard white varnish. Simply write the name and allow the ink to dry. I have used labels of this description for many years, and have never lost a name since adopting them. They are equally suitable for the house or the open air.—P. NEILL FRASER, *Rockville, Murrayfield, Edinburgh.*

Double-glazing on the Continent.—Allow me to state that there is another important reason for double-glazing glass houses in some parts of the Continent besides that assigned (p. 340). For all glass structures which do not admit of being easily covered with boards double roofs are absolutely necessary, on account of the frequent destructive hail-storms and heavy falls of snow which are experienced in those parts. The outer frame is generally of what is there termed double-glass, which is about the same as our 21-oz., whilst the inner one is equivalent to our 15-oz. The air vacuum thus obtained offers an efficient resistance to both hail and snow. Houses glazed in the ordinary manner would be liable to be broken in a single night by those tremendous snow-falls which are, especially in North Switzerland and South Germany, so often experienced. I would at the same time wish to enter an emphatic protest against double-glazing in this country, as, apart from the unsightly aspect which such a roof must always have, I have found that it has a weakening and debilitating effect upon everything grown under it.—J. CORNHILL.

Begonia Weltoniensis in the Flower Garden.—In my opinion this Begonia is one of the best which we have for bedding purposes. We have it bedded out here with the best results. It withstands rain, wind, and sun without injury, besides affording a change from Pelargoniums, now so common. To those who have not tried this variety, I am confident that if it succeeds with them as it has done with me, after they have once grown it they would give it a second trial. This variety looks well grown in pots, but it does best out-of-doors. Small plants of it put out in the end of May or beginning of June soon make fine specimens. I have grown other kinds, but have not succeeded so well as with this one, as rain and wind damage them, and they require staking, which Weltoniensis does not.—D. GILLETT, *The Heath, Weybridge.*

Vegetable Moth Trap from Brazil.—I have a large plant of Physianthus albens trailing up the porch at my front door on which it grows rapidly, and in the autumn flowers in profusion. It is one of the most deadly moth traps I know. Every day I find from two to eight humming-bird hawk moths caught by their probosces in the flowers, and they appear to die in about two minutes. I often find other insects dead in the flowers.—" Field."

TREES AND SHRUBS.

TREES AND SHRUBS FOR AUTUMN EFFECT.

Now that deciduous trees and shrubs are once more beginning to attract the attention which they so well deserve, and which was diverted from them when Conifers became such favourites, instead of the monotonous sombre green of the Pines and their allies, we may expect to see more frequently the delicate tints of early spring furnished by the swelling leaf-buds or opening blossoms, the manifold shades of green during the summer months, and the brilliant coloration assumed in autumn by many of the fine deciduous trees from North America and Eastern and North-Eastern Asia, which were much more generally known at the commencement of the present century than they are now. At present many trees at Syon and Kew form magnificent pictures in their gaudy autumn dress of scarlet, yellow, or purplish-red illuminated by the rays of an October sun. If planters would but note the wondrous autumnal changes in the foliage of many deciduous trees and plant accordingly, they could easily create such effects as would as much surpass the ordinary haphazard style as a picture by a "Turner" would be superior to another painted by a schoolgirl. With care, too, the summer tints might be made to thoroughly harmonise, so that at all times the individual beauty of a tree might be enhanced by judicious contrast. Trees with totally different habits might also be chosen, so that, even when leafless, the tracery of the branches would be a source of artistic enjoyment. My remarks, are, however, confined to autumnal tints and to trees and shrubs which are most noticeable at the present moment. Many of these are somewhat uncommon, all are strikingly handsome, and even the common ones deserve to be more generally known and appreciated. For truly gorgeous coloration now some of the American Oaks bear off the palm. Perhaps the most beautiful is the Quercitron Oak, of the Eastern United States (Quercus tinctoria), the fine, deeply-lobed foliage of which exhibits a lovely combination of dark glossy green, crimson, and reddish-brown, the green occupying generally the central portion of the leaf. Quercus rubra, the Red Oak, and its varieties, are especially noteworthy; in these the redder tints are more unalloyed with other shades, so that in the sunlight the leaves brighten up and glow as if they were on fire. Q. alba, the White Oak, is a noble tree with large, finely coloured leaves, brownish-red being the prevailing shade. The Chestnut Oak (Q. Prinus) and its varieties, with their large, Chestnut-like leaves, are hardly less beautiful than the Quercitron and Red Oaks, and assume colours in which bronze and reddish-purple predominate. Totally different in colour and habit of growth are the Hickories; two of the most showy at present being the Pig-nut Hickory (Carya porcina) and the small-fruited Hickory (C. microcarpa) from the Eastern United States; both have Walnut-like foliage, the large leaves of the first being of a uniform rich golden-yellow, while the smaller ones of C. microcarpa are toned down by an admixture of green. The Yellow Wood (Cladrastis tinctoria), from Kentucky and Tennessee, is one of the handsomest of the flowering trees of the Locust kind; it is now clothed with large, pinnate leaves, which are of a fine orange-yellow shade. The Bird Cherry (Prunus Padus), particularly when planted in open ground, has leaves tinged with rosy-red, and one of the prettiest effects I have seen for some time was a group of Bird Cherries with a background—a few yards away—of dark, glossy, evergreen shrubs. The June Berry (Amelanchier canadensis), although not possessing the delicate tints of the last-named, wonderfully enlivens the shrubbery with its red-brown leafage. The Red Mulberry (Morus rubra), from the Eastern United States, is very conspicuous on account of its sulphur-coloured, prettily-lobed leaves; it is a small tree, and, with a background of dark green, such as that afforded by the Evergreen Oak (Quercus Ilex) is most striking. The Blue Beech (Carpinus americana) is a small tree from 10 ft. to 20 ft. high, and a group of it now, on different individuals and, in a few instances, on the same plant, exhibit a charming combination of green, golden-yellow, light red, and crimson. The South European Acer Opulus furnishes us with a mixture of purplish, orange-scarlet, and brown tints. The Cherry Birch (Betula lenta) of the Northern and North-Eastern United States, makes a fine tree; it is now covered with clear golden-yellow foliage, which is especially attractive in sunlight. The Black or Sour Gum, or Pepperidge—for under all three names is Nyssa multiflora known in its native haunts, the Eastern United States—has fine, bold, glossy leaves, now assuming a brilliant orange-scarlet colour; an accidental combination of this with a specimen of Ptelea trifoliata, with its lemon-yellow, pinnate foliage, produces a very happy effect, which is much admired. The Cockspur Thorn and its numerous varieties make striking objects during the autumn, and vary much as to the time when their leaves change colour, and also when they fall. The most handsome now are Cratægus Crus-galli splendens, in which the normal dark green foliage is enlivened by an admixture of crimson-scarlet and orange-yellow leaves, some being merely edged with deep red; and C. Crus-galli ovalifolia, which is one of the first to don its autumn garb, and, moreover, one of the most desirable; deep red and reddish-brown, tempered by a suspicion of orange-yellow, are the principal tints exhibited by this pretty little tree. C. Downingi has dull purple leaves, which are, however, very effective in strong light or sunshine. Rhus radicans is a very suitable plant for the woodland border; when allowed its own way it will climb amongst shrubs and low trees, and take perfect care of itself. In sheltered places its leaves have not yet begun to change, but more in the open they are already bright yellow. A plant which has climbed amongst the branches nearly to the top of a tall Cypress, at the edge of a wild piece of shrubbery, forms a perfect picture, its large, bold foliage being set in a framework of glaucous green. Hamamelis virginica is a small shrub with golden-yellow, Hazel-like leaves, which remain attached to the branches for some time after they have changed colour. Rhus elegans, a North American shrub or small tree, which ought to be much more generally known, has elegant pinnate leaves, from 12 in. to 18 in. long, the brilliancy of whose tints, of which the predominant ones are orange, scarlet, and lemon-yellow, nothing can well exceed. The common Guelder Rose furnishes rather dull purplish shades, which, however, form an agreeable and striking contrast to the foliage of most other deciduous and evergreen shrubs; it stands cutting well, and when so treated, retains its foliage for a longer period than when allowed to grow untouched. It is now very effective in the mixed shrubbery. The Maiden-hair tree (Salisburia adiantifolia) makes pretty autumnal effects, its peculiar green leaves turning to clear, soft yellow, while a blotch near the attachment of the stalk to the blade keeps for a time the normal colour. A variety of the common Vine (Vitis vinifera rubescens) either when trained to stakes, when grown against a wall, or as a covering to arbours, &c., assumes a deep purplish-red colour, both striking and peculiar, and under the influence of sunlight, extremely gorgeous. Pyrus arbutifolia is a charming shrub with glossy, pointed leaves about 3 in. long by 1½ in. broad, which have now put on magnificent shades of rich vinous red and deep orange-yellow. The purple-leaved variety of the common Sycamore (Acer pseudo-platanus purpurascens) has its purplish tints intensified at the present season; when grown in company with some of the American and South European Maples in which yellow is the prevailing shade, a good contrast is obtained. G.

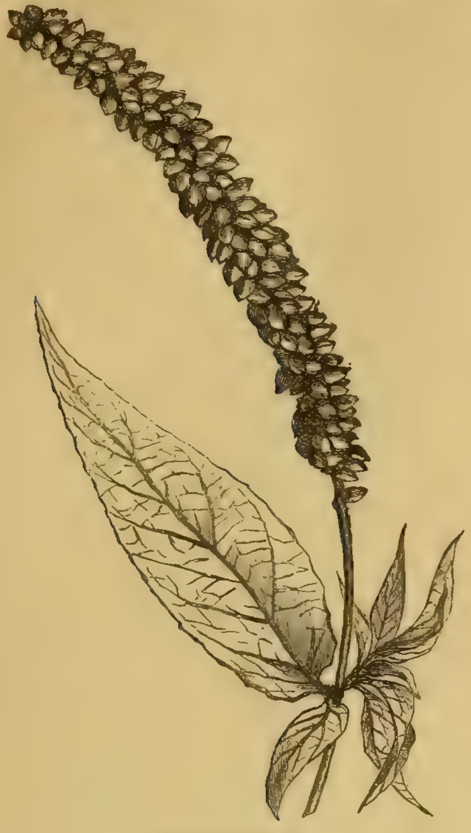
Cassia corymbosa Out-of-doors.—It may interest Mr. Uphill (p. 279) to know that there is quite a large shrub of Cassia corymbosa out-of-doors in the garden of Canon Beadon at North Stoneham, near Bishopstoke. It surprised me exceedingly when I saw it a few days ago, and it certainly is a most beautiful shrub. It was planted several years ago, and though of course it is cut down in a hard winter, it sends up strong shoots in the spring and just now it is in a most flourishing condition.—Henry Ewbank, *Ryde.*

A Birch Wood.—In passing through a wood wholly composed of Birch trees the other day I saw beauties in the crowded trees distinct from those that we all admire in the isolated ones. The numerous white pillars, tall and slender from overcrowding, and the arched effect over a narrow roadway were beautiful. The whole thing was very suggestive to me of the drawbacks of the usual mixed system of our shrubberies and groves—a system by which one sees the same effects almost everywhere.—H.

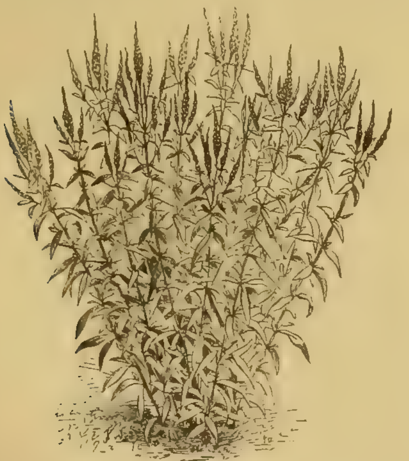
BUDDLEIA INSIGNIS.

This is a very remarkable Buddleia, raised, it is stated, from seed of the old B. curviflora, from which it differs in almost all its characters. It is a dwarf, compact, erect shrub, not unlike a large Veronica with ternate leaves. The flowers are of a lilac-purple tinged with red, and they are produced in great profusion. Of its value as an ornamental shrub in the climate of this country we can say nothing at present, but it is much praised in the "Revue Horticole."

W. B. Hemsley.



Buddleia curviflora.



Buddleia insignis (one-twentieth of natural size).

AUTUMN LEAVES.

There is no department of ornamental gardening in which more remains to be done than in that of trees and shrubs with coloured foliage, particularly and mainly those that change their usually green leaves to various bright hues. We have all heard and read much of this subject, even from a garden point of view, but we have never yet witnessed any deliberate and worthy attempt to represent in garden or in park the glory of the leaves of trees. Of course we except that shown by our native trees, which is often as remarkable as those of any other country. It is common to praise the beauty of certain North American trees, but seldom or never is allusion made to our own. Nevertheless, we did not observe (so far as one autumn in America could enable us to judge) anything more beautiful than we have now and then seen afforded by English trees in the south of England, and even in parts of Scotland. We remember one year seeing the avenue of Elms in Kensington Gardens a golden grove, and a most lovely one.

We say so much of native trees mainly to call attention to the many treasures that are within the reach of planters. For if so much leaf-beauty is displayed by the comparatively few trees and shrubs of our own island, the fact suggests the rich stores that are within our reach from the trees and shrubs of many other northern and temperate countries in both worlds. For, as before shown, it is a mistake to suppose that American trees alone possess marked beauty in this way. The habit of changing from green to various colours as the leaf prepares to fall is frequent with deciduous trees and shrubs in northern countries generally, modified considerably, no doubt, by the amount of sun at the period of their ripening, the climate, soil, and situation. If, however, America does not by any means possess all the tree-beauty in this way, there are many of her trees and shrubs that possess the charm of autumn colour in a marked degree, and these for the most part are much neglected—and neglected not only by those who know little or nothing of trees, but also by people with some knowledge of the subject, and much opportunity as to the chances of making pictures of such materials as we speak of. None possess them in such a high degree as the owners of the parks of the United Kingdom. In few other countries does one, even occasionally, see in private hands such beautifully wooded and Grass-carpeted "home landscapes" as occur in almost every part of these islands. Only in such places can ornamental tree culture be carried out as it ought to be, including the particular form of it we now allude to. The unrivalled and necessary foregrounds of turf, the variety of surface, the ample space to allow of objects being seen at various distances—these are the conditions that permit of tree culture being carried out to a far more satisfactory and far more scientific degree than ever was seen in the old pedantic botanic garden way of crowding species together, and rarely permitting any one to express its full value singly, in groups, groves, and combined with others.

It is essential to a fuller representation of the coloured arboretum, so to say, that more attention be paid to the planting of deciduous trees than has long been the case. For years the attention of planters has been almost entirely fixed on Coniferous trees, to the neglect of those we think more valuable for the parks of these islands generally. Taking these Conifers at their best in their native countries, many of them (not by any means all) have excellent qualities; but the question for us is what they are likely to do in our own country or district. There can be no doubt to any observer who looks beyond the young trees in nurseries, and watches what becomes of most Coniferous trees as soon as they get beyond the fresh, moist soil of the nursery, and above its sheltering hedges, that a great number of what we may call fashionable Conifers are wholly unfitted for planting in our lowland parks generally. Of course there are places where a genial seaside or hill climate, and favourable soil, enable some of the trees to which we allude to keep in good health, and even to grow vigorously, for many years; but we speak of the country generally, and of the many places where there is no Philip Frost to place many a load of good loam over the roots of his favourite Douglas Fir. The trees we want are the trees that take care of themselves after being fairly planted. Few deciduous trees fail to do this, while scores of Conifers do. Deciduous trees are those naturally suited for our lowland gardens, because they are the trees of the plains, and also of the hills and lower mountains, whereas Conifers are generally trees of the mountain, and often require somewhat similar conditions. But even if the Conifers were able to hold their own in growth and endurance with the deciduous trees, we should then have to claim for the latter, at the very least, an equal place from their beauty of changing dress, flowering and picturesque qualities. Those, therefore, who want their parks to display all the beauty which trees can show in our latitudes, will plant them largely in groups and groves, as well as singly, and always seek to use species that colour well in the planter's district. Some few trees of Norway Maple, which we saw this morning in a garden, make us wish for a cloud of its foliage on rising ground, with a good sweep of

Grass in the foreground. If, indeed, we only had the various Maples, fine effects of colour might be obtained in autumn; but there are many other trees equally good. How rich we are in this way, indeed, has probably never been ascertained, certainly never stated. The autumn beauty of trees and their curious changes is of course a subject far beneath the lofty contemplation of the botanist, who is more frequently found adding to the mass of technicalities with which the science is burdened, or writing a memoir on a fungus found on a stickleback, than studying such facts and effects as we speak of. On the other hand, the usual types of "bedding-out" maniacs, whether gardeners or amateurs, are deplorable creatures, whose costly efforts have only succeeded in making the gardens of Europe ridiculously alike. Splendour of colour in a tree is of course nothing to anyone who spreads out the colour of flowers as manufacturers do that of oilcloth. To those who look at the vegetable kingdom in a broader way, there is, apart from the important question (or rather need) of planting for use and profit, a great deal of delightful interest to be found in planting ornamental trees somewhat out of the common way, and not a few new paths remaining to be followed up in it.—"Field."

FOREST WORK FOR THE END OF OCTOBER.

The early part of the present month has proved most favourable to the operations of the forest planter, both in respect to the preparation of the land, the cartage of materials, and the getting up and removal of nursery stock. Wherever the transplanting of evergreens and coniferous trees is finished, he may now proceed with those of a deciduous kind, the wood of which is, in most situations, fairly ripened. The system of pit planting without trenching is not to be recommended upon very retentive soils, as the holes hold too much water throughout the winter to admit of the young trees being in a healthy state. For spring planting this system is not so objectionable, but it should be followed by a complete trenching or stirring of the intermediate spaces during the following autumn. Avoid raising, removing, or planting trees during frosty weather, from which their future growth will be certain to receive a check.

In cutting new ditches or watercourses through the plantations, those upon the higher ground should run obliquely to the fall of the land. This insures a more regular drainage, and also prevents the washing of the bottoms of the drains, which takes place where the stream is rapid. All open ditches should now be cleared of rank growths of weeds and accumulations of leaves, so as to give a free course to the water. The benefits of good open drains in plantations upon very wet soils may be seen at a glance by following the course of a main ditch, as the growths of underwood upon its margin will be much stronger and healthier than shoots of the same age springing from stools more remote from the watercourse.

Commence the thinning of plantations, leaving Oak and other trees, for the bark of which there is a local demand, to be felled in the spring. Early thinnings give great advantages to the forester by enabling him to avail himself of frosts for the removal of his timber. Where the timber is to be sold standing it should now be marked and allotted; but in most cases the interests of the proprietor are best served by the timber being felled and cleared under the directions of the forester, and the produce afterwards removed to some convenient place outside the woods for sale by auction.

Finish trimming and clearing the wood-rides, and attend to the repairs of culverts or pinnocks; also look to the larger transplants, staking and tying such as require it, and treading up the soil or ramming it round the stem. Wash with a mixture of Stockholm tar, linseed oil, lime, and cow manure, the stems and lower branches of all young stocks liable to attacks from hares and rabbits. Trees fresh from the nursery are much more likely to attract them than those which have stood sometime in the woods.

In the nursery continue the planting of Acorns and Sweet Chestnuts, and gather Maple seeds of all kinds. Beech nuts, if put in now, may require protection from the frosts in April and May. Manure and trench nursery plots from which Spruce, Ash, Elm, Beech, Sycamore, Hawthorn, and some other exhausting plants have been taken. The planting of all Hawthorn hedges should be finished with as little delay as possible.

The falls of coppice or underwood may now be marked out, and alloted ready for sale, but we reserve particulars of this for next month. Collect seeds of the Ash, Alder, and Birch, preserving the former in dry sand, and the two latter in a dry and airy loft. The transplanting of young stock in the home nursery will also now demand attention. Upon heavy soils this should be carried on when the ground is damp, but not excessively wet, as the treading on the land is very detrimental to the young plants. A. J. Burrows.

THE AZARAS.

About a dozen kinds of Azaras are known, and all are natives of Chili; although they are not by any means generally known, most of them are in cultivation, and some are strikingly handsome. As wall plants, particularly if the walls have an eastern or western aspect, they make fine objects and flower freely, while in the southern counties, at least, they do well in the open shrubbery—unless too exposed. Good, rich, well-drained loam and partial shade from taller shrubs seem to be the conditions in which they most delight. All are easily propagated by cuttings of the half-ripened wood inserted in sand under a bell-glass. The following are those best worth growing:—

Gillies' Azara (A. Gilliesi) is probably the handsomest of the whole genus: its toothed leaves have the colour and texture of those of the Holly, the branches being richly tinged with red. In its native country it attains a height of 10 ft. or 15 ft., and, as a cool conservatory plant, will grow quite as high in England; it, however, bears cutting well, so can easily be kept within any bounds. As a corridor plant few shrubs are more charming than this. Both in the open air and under glass it flowers in the late autumn and winter months. The blossoms are small, but are collected into oblong heads, resembling golden catkins from the enormous number of rich orange-coloured stamens. A. celastrina has coarsely-serrated leaves similar in outline to, but rather less than, those of A. Gilliesi; its yellow blossoms are arranged in lax corymbs.

Entire-leaved Azara (A. integrifolia) has handsome, thick, leathery, dark green leaves and drooping spikes of very fragrant, golden-yellow blossoms; it forms a dense bush a few feet in height. A variegated form of this originated, we believe, a few years ago at Kew. It is a beautiful plant of good habit, and very constant in its variegation, but as yet seems to be very little known.

Small-leaved Azara (A. microphylla), introduced a few years ago, and recently distributed by Messrs. Veitch, is a fast-growing and very beautiful shrub with small, deep green, glossy leaves. The flowers are somewhat inconspicuous, but the graceful and peculiar habit of the bush makes ample amends for the smallness of the blossoms; the branches, which are densely clothed with pretty foliage, are arranged in nearly horizontal tiers, and furnish a style of beauty not possessed by any other hardy shrub.

Tooth-leaved Azara (A. dentata) is a quick grower, and forms a fine evergreen bush in a tolerably short time; it has hairy, glaucous leaves, and flowers arranged in umbellate clusters.

Saw-leaved Azara (A. serrata) has prettily-serrated leaves, and long-stalked umbels of yellow blossoms. A.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Rosemary in Masses.—Where a dense low thicket is admissable, jutting out from a taller growth behind, or to clothe the side of an overhanging bank, Rosemary may be effectively employed. The play of light and shade amongst its spikes of grey and green foliage is very charming when grown in a mass. A single plant fails to give an impression of its unique character in this respect. Cuttings put in now soon make good plants.—E. Hobday.

An Avenue of Mountain Ash.—A line of old and large and rugged trees of this looked well lately bordering a road entering a Bohemian village. Even the large and old branches drooped, so heavy was the crop of scarlet berries. The Mountain Ash is by no means one of the best trees that could be selected from among the deciduous groups for avenue planting, yet it struck us that it afforded a better effect than could be hoped for from some of the avenues of half-hardy Conifers, which it has long been the fashion to plant in the "best places" too often without considering the fitness of the climate for them.

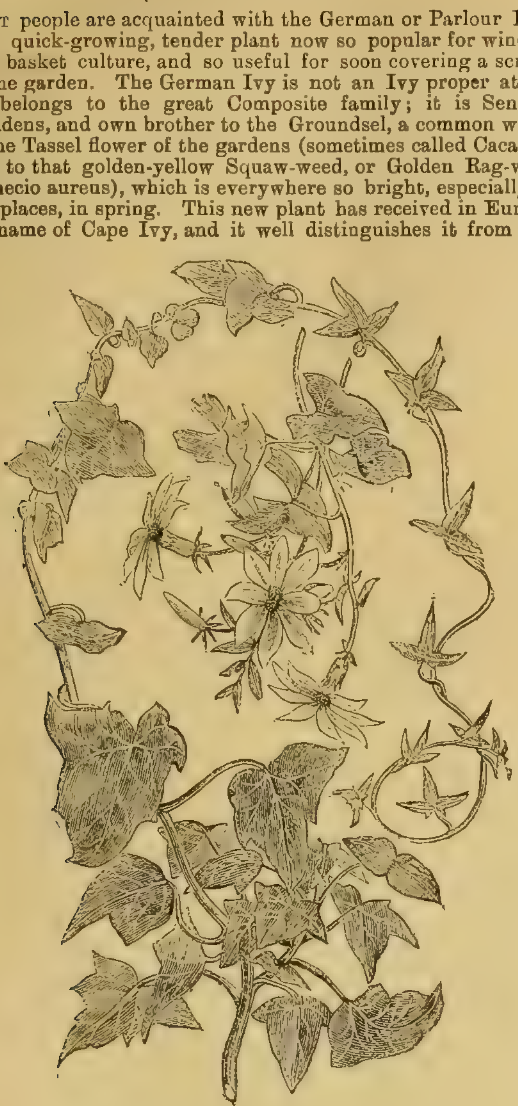
Rhododendrons and Roses.—I can well understand "D." (p. 316) being pleased with the effect which these produce. We have some clumps of Rhododendrons here from 20 ft. to 30 ft. high, and here and there amongst them different kinds of monthly and China Roses have been planted which throw out clusters of flowers, and as they bloom nearly all the year round, they have a very pleasing effect at all seasons, but more especially when the Rhododendrons are out of flower. They are, of course, allowed to grow without restraint, rambling about where they like over the tops of the Rhododendrons, a circumstance which enhances considerably the effect which they produce.—Cambrian.

THE FLOWER GARDEN.

THE CAPE IVY.

(SENECIO MACROGLOSSUS.)

Most people are acquainted with the German or Parlour Ivy; that quick-growing, tender plant now so popular for window and basket culture, and so useful for soon covering a screen in the garden. The German Ivy is not an Ivy proper at all, but belongs to the great Composite family; it is Senecio scandens, and own brother to the Groundsel, a common weed, to the Tassel flower of the gardens (sometimes called Cacalia), and to that golden-yellow Squaw-weed, or Golden Rag-wort (Senecio aureus), which is everywhere so bright, especially in wet places, in spring. This new plant has received in Europe the name of Cape Ivy, and it well distinguishes it from the other climber, which, though called German, comes from the same locality—South Africa. After growing the plant for a few weeks we have had an engraving made of it, which, while the leaves are not so large as they would be on a stronger plant, gives a good idea of their shape and Ivy-like appearance. While the colour of the better known German Ivy is of a light and rather yellowish green, the leaves of this have the dark and blackish green so peculiar to true Ivy, and which gives to this newer one a richness which the other lacks; besides this, the leaves have much more substance than those of the other, though they are still soft, and have not the rigidity of those of true Ivy. Some months ago we made the statement that, though we had in 1867 figured the German Ivy in flower, it rarely bloomed; since then several have informed us that it flowered with them, and one friend sent us abundant specimens. The flowers in the "German" are in large clusters of small heads which have no ray-florets, and are only about ¼ in. across, while the Cape Ivy has but one or two heads at the ends of the flowering branches, which have showy rays, and are 2 in. or more across. The Garden and other English papers say that this Cape Ivy is quite as well suited to house culture as the other; If it proves to be as manageable as the German Ivy, it must become very popular, on account of its finer colour and closer resemblance to Ivy.—"American Agriculturist."



The Cape Ivy (Senecio macroglossus).

FACTS AND FALLACIES IN LILY CULTURE.

I regret that other engagements have hitherto prevented me from replying to Mrs. Newall's "comments" (p. 264) on my letter (p. 216), which have been forwarded to The Garden by Mr. G. F. Wilson. Mrs. Newall writes as follows: "'Dunedin' misunderstands my letter a little. I do not say that my plants degenerate, and that the flowers grow smaller and the stems dwarfer every year." Now, if Mrs. Newall will look at my letter again, she will see that I made use of no such words as those written by her. She adds: "I simply mean that, contrasted with what they were when only put out for the summer, they are smaller." This is something entirely new; for it will be seen that no such phrase appears in her first letter (p. 200), and therefore it could not have been even alluded to by me. She said in her first letter: "The flowers may be a little smaller, very little, and the plants considerably dwarfed, but I consider that they are acclimatised." And in her second letter she calls this "a great gain." As regards acclimation, Mrs. Newall is simply deceiving herself, and sacrificing the quality and beauty of her Lilies to a visionary idea, as she cannot be aware that the bulb that blooms one year never bloomed before, and will never bloom again. This is confirmed by her second letter, "comments on mine," in which she actually compares other plants, "bulbous and tuberous rooted," with the incomparable organisation of the Lily itself. That her culture is faulty in other respects there cannot be a doubt, for she says: "This summer the number of stems in a round bed 1½ ft. in diameter was eighty-two." Now we know that, though there may be twin bulbs and triplets among so many, every stem must spring from a distinct bulb. We have, therefore, here eighty-two bulbs crowded into a space only 18 in. in diameter, besides the dead and dying crushed into a mass below, a feast for worms. Eighty-two bulbs of L. speciosum or auratum in such a confined space would not allow each bulb to grow more than one-third of its natural size without being crushed up against its neighbour. And yet Mrs. Newall complains about the plants being considerably dwarfed. How could they be otherwise? If "R. C. R." (p. 238) had treated his Lilies in the same way, where would have been "his bulbs by the hundred, and his blooms of the greatest beauty by the thousand?"

Top-dressing Lilies.

Let us now turn to p. 304, and see what Mr. Wilson himself has to say regarding Lily culture. He says: "'R. C. R.' (p. 238) was of course right in replanting his L. speciosum when the growth showed the soil to be exhausted; the only alternative would have been top-dressing, as practised by Mrs. Newall" (p. 200). Does Mr. Wilson really mean to say that any kind of top-dressing would have relieved "R. C. R" of the "nest of bulbs" which "he found deep in the soil?" "R. C. R." did, in fact, what Mrs. Newall should have done, and what I recommended her to do long ago. Had "R. C. R." applied top dressing, as practised by Mrs. Newall, he would have done a great dea lof harm and no good whatever, for he would have encouraged the growth of offsets among the "root growth above the bulb," to which it will be seen Mr. Wilson himself alludes, making the bottom part of the stem a perfect colony of small bulbs to the great detriment of the main, or new bulb itself. Mr. Wilson continues: "In some beds at the entrance of a carriage drive, where large bulbs of L. tigrinum Fortunei were planted very thickly for the sake of the immediate effect of close-growing, large clumps, last year, these were grand and much admired; this year, though very beautiful, the plants were hardly as strong as last, showing that their bed, though made with good, deep soil, was becoming exhausted. In one of these beds I propose to change the soil in another to top-dress for the sake of experiments." It is strange that Mr. Wilson did not recommend this plan to Mrs. Newall. The reader may recollect that at p. 217 I recomended it to Mrs. Newall, viz., one half one way, and the other half the other way. In my opinion, however, as already stated with regard to the stem roots, Mr. Wilson will gain nothing by top-dressing L. tigrinum Fortunei. As regards changing the soil, unless this has been done immediately after the bloom was over, the change will be too late, I fear, to ensure a good bloom the first season. It is a common complaint that transplanted Lilies do not bloom well the first season after their removal, but few seem to know that late or deferred lifting and replanting is the cause. With regard to top-dressing, Mr. Wilson says, "We see every year the effect of top-dressing in the case of our orchard-house trees which are in perfect health although they have lived in pots for more than twenty-three years." Surely Mr. Wilson cannot mean to compare the culture of fibrous-rooted perennial trees more than twenty-three years old with that of successional Lily bulbs, the interior economy of which is so clearly illustrated in THE GARDEN (p. 237), though still—as it appears to be—a dead letter in the hands of all who believe in Mr. Baker's perennial theory? Mr. Wilson says: "For some years they (the trees) have been past turning out of their pots, so the earth is grubbed up for some distance down, and fresh soil and, afterwards, manure are applied, much as Mrs. Newall treats her Lilies." I fail, however, to see the slightest resemblance between his treatment of the trees and the top-dressing as practised by Mrs. Newall. She says, "I only lay cinders and tan over the roots during the latter part of the winter, and use no protection in spring, but I water and manure freely." In another part of her letter she says, "I take as much soil off as I can every year and heap fresh soil on to them." There is not a word about "grubbing up the earth for some distance down;" in fact, she could practise nothing of the kind with eighty-two bulbs growing in so small a space as 18 in. in diameter. A top-dressing of manure applied in the autumn to L. candidum and its varieties would in a great measure prevent the leaves from falling off from the lower part of the stem, which they are apt to do before the blooming season is over. But if applied to L. speciosum, auratum, tigrinum, or others that have a tendency to send out "root-growth above the bulb," it would do a great deal of harm, as the offsets encouraged thereby would draw nourishment from the main bulbs, which it is the function of the lower roots to supply to them. The natural and, consequently, most beneficial way is to feed the plant at the lower roots, which imbibe crude sap from congenial (not exhausted) soil, conveying it up to the bulb, where it is elaborated and stored up during the winter and early spring in a growing and enlarging new bulb, and in which it is fitted to be carried up by the growth of the stem, for the production of the flowers. I regret to see that Mr. Wilson has made so sad a mistake (see p. 332) as to say that the safest guide, as to the best time for removing Lilies, is the appearance of the stems. It will be in the recollection of some of your readers that, in May last, I undermined clumps of L. bulbiferum, candidum, longiflorum, speciosum, and some others, and separated the stems entirely from the bulbs. The stems without the bulbs continued to grow, and actually flowered at the same time with those of similar kinds that had not been disturbed. These stems, with the exception of those of L. candidum, which faded first, have kept their leaves green for a very long time, as it is only ten days ago that I lifted them, and some of their leaves, you will see from the stems which I send you, are not quite faded yet. But what I most particularly wish you to notice is the quantity of fine offsets at the bottom of each stem. Some of the original bulbs that were cut from these stems, and replanted at the time, were also again taken up ten days ago, and had new roots 13 in. and 14 in. long. They had also short new roots when taken up in May. These things can be verified by a cultivator who was present. Your correspondents may, of course, do as Mr. Wilson recommends; but they will do so at the expense of the early and best roots, for we cannot get over the fact that every day after the flowers have faded before the bulbs are transplanted is a day lost, to be deducted from the welfare of the new roots; for the appearance of the stems has no connection whatever with the new successional bulbs.

Large Bulbs not the Best.

As Mr. Wilson, and almost all Lily growers, seem to look upon "large" bulbs with special favour, allow me to make a few remarks on the subject for the consideration of your readers, more particularly as the time is approaching when we may expect to see imported bulbs. A writer in THE GARDEN, among other qualities, recommends the selection of "weighty" bulbs. This at once indicates that the writer is a believer in the perennial theory, namely, "that the bulb goes on living for an indefinite period, sending out each year a flower stem from its centre." But we who know that the bulb of the season is a successional bulb know also that to purchase our bulbs by weight we would be paying for the old decaying scales, as well as for the new bulb within them. What Mr. Wilson now believes I am somewhat at a loss to say; but when he supported me in 1877 (p. 188, March 10) by saying that the bulb of L. giganteum unmistakably dies after flowering, and that the same may be said of some of the North American Lilies, I was in hopes that he had found the perennial theory to be entirely untenable. At page 286 "W. H." says: "We purchase a quantity of L. auratum annually. When the bulbs arrive they are examined, and arranged according to their sizes, the largest being set aside for pot work." He does not explain on what principle he conducts his examination, or why he sets aside the largest for pot work, though it is evident that he considers them to be the best. Now, I would never think of choosing a large bulb because it was a large one. I would sooner have a medium-sized bulb of a certain character. I remember some very large bulbs, with two and three crowns or growths each, being offered for sale at a much higher price than any of the others. These I would never choose if medium single-crowned ones could be had. My reason is this: These sorts of bulbs are what are properly called twin bulbs, and triplets or three at a birth, springing from the same source, and consequently they have only one set of roots to support the whole. These wonderful phenomena in Nature lead me to think that our Lily bulbs would have more of our consideration if we could only realise the important fact that "plants, like animals, are organised and living beings." That when there are two or three at a birth, the stems are often more weakly than when only one springs from a bulb. We are indebted to Mr. J. Stewart Gathorne Hardy (see p. 238) for proving that the shilling or third-class imported bulbs of L. auratum bloom admirably, and flower with from five to sixteen flowers on a stem, and may be relied on, "if purchased from a respectable person." This agrees entirely with my experience. Take one of the largest or first-class bulbs and plant it in the autumn in poor or exhausted soil; then take one of the third-class, and plant it in fresh congenial soil. The new bulb within the third-class one will soon send down its roots, and will grow more and more during the winter and spring, and if taken up just before the flowering begins, it will be found to be much larger than the new or successional bulb within the first-class one, while the new bulb within the first-class one may be dwindling away from want of proper nourishment. This is indirectly confirmed by the author of "Notes on Lilies," though the cause is not given. He "found bulbs of the size of a medium Orange when in flower, though when planted they were only as large as a five-shilling-piece." He also found some that "when taken up were smaller than when planted." It is not what we plant, but what we can make of the new or successional bulb by intelligent and careful cultivation. Mr. Wilson stands deservedly high as a Lily grower, and so do many others, but no man can become a good cultivator who believes in the perennial theory, which is a pernicious fallacy.

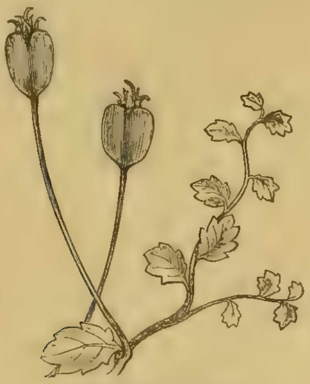
DUNEDIN.

Valeriana Phu aurea as a Spring-bedding Plant.—This is one of the best spring-bedding plants with which I am acquainted. This golden variety, as we have it here, attains a brilliant transparent yellow, far surpassing that of the Golden Feather. It grows luxuriantly, and on good soil need not be closer planted than 1 ft. apart. Beds of it command more attention in February than those filled with any other spring plants, and they hold good till required for their summer occupants. It assumes the appearance of well-blanched Chicory, but is of a soft clear yellow colour. I am not aware whether heavy or light soil suits its growth best, but on our soil it keeps its colour in perfection for three months. It is perfectly hardy, and was picked up, an only plant, by a cottager's door in Northumberland.—J. Hunter, *Lambton Castle, Durham.*

THE HOLLY-LEAVED LOBELIA.

(L. ilicifolia.)

The annexed illustration represents a little old-fashioned Cape Lobelia in fruit. It has a trailing habit, with slender stems rising from 3 in. to 6 in. high, furnished with small oval leaves, toothed, and wavy, much in the same manner as in the common Holly. The flowers are produced about September, and are borne singly on slender stalks from the axils of the leaves. They are about ½ in. across, have five narrow divisions, and are of a pink or flesh colour; these are succeeded by purplish, globular fruits, which remain on the plant the greater part of the winter. It is well adapted for growing in suspended pots or baskets, so that the branches hang over the sides, a way in which they have a pretty effec in cool greenhouses. As regards soil, it should be planted in light, rich material. W.



Lobelia ilicifolia in Fruit.

PORTULACAS AND THEIR CULTURE.

A recent visit to Messrs. Sutton & Sons' London Road seed grounds afforded an opportunity of inspecting a large collection of double and single Portulacas which had been planted out to note the best and most striking varieties to select for collections. The plants had been planted out in well-prepared ground in a single line in the border by the side of the main walks, and were exposed fully to the sun, and indeed to the action of the elements. They were doing well, had made a good growth, and were flowering with remarkable freedom and brilliancy. The Portulaca supplies some of the most brilliant colours among flowers, and when the sun shines fully on the plants, and the expanded flowers are open to the eye, the effect of a line or large patch of plants is very fine. Portulacas can be had in both single and double forms. Some prefer the former and some the latter, but both make effective border flowers. Of the single flowers, the best were aurantiaca, golden-buff in colour, some of the flowers having more yellow in them, but both forms very pretty; occulata, having a yellow centre with a purple ring round it and a broad margin of white, very good and distinct; splendens, a variety well named, the colour rich purplish-crimson (this is one of the very finest varieties); Thellusoni, orange-crimson, very fine; and Thorburni, bright yellow and very distinct. At some time or the other these single Portulacas showed a tendency to become double, and this having been followed up, a race of double varieties has resulted. These are all, more or less, double forms of the single varieties, and by dint of selection they now produce very large and full double flowers. The yellow and buff are double forms of aurantiaca, and, being flushed with red on the interior of the petals, are highly effective. Rosea plena, bright rose, is very handsome, and some of the flowers take on a depth of colour which makes it appear to be a double form of splendens. One of the most beautiful varieties is caryophylloides; its flowers are fully double, and are marked with purplish-crimson on a blush ground, and broadly flaked with the same. The Sulphur is a double form of Thorburni. There are other colours, but I have made a selection only of the most distinct, but all are good. These are well worth cultivating, but should be grown well. It is a common practice to starve Portulacas, as if they did best when in this poor condition. I hold the opinion that, like many other plants, Portulacas should be planted in good soil, in which they can thoroughly establish themselves, covering the surface of the ground with a dense coating of foliage, and then when the hot, bright, midsummer sun falls on the plants, hundreds of splendid flowers leap up responsive to its influence. Portulacas are most effective when they are not unduly crowded. Individual plants should have ample space in which to grow, as they quickly cover a good space of ground. The soil being made good, the surface should be covered with ½ in. or so of mortar rubbish, and over this some fine soil should be sprinkled. On this let the seed be sown thinly, and all in danger of being crowded removed as soon as large enough. The roots grow quickly through the grit to the rich soil below, and the plants, becoming thoroughly established, bloom on till autumn dims their lustre. D.

WINTERING ALPINES.

There is a large number of these beautiful miniature forms of vegetation, which, though they can endure without injury a greater degree of cold than we may reasonably expect to experience in this country, perish annually from the excessive humidity of our ordinary winters. It therefore behoves every one who wishes to avoid such a loss to provide some means to prevent it. Where a collection is grown in pots this is a simple matter, as the plants likely to be injured can be easily placed in frames, but where they are planted out on a mixed rockery they are not so manageable. Some cultivators lift and pot those which are most susceptible to injury, but as a rule it is a bad policy to do so, as at this season the majority are in a state of inactivity, and to disturb them without taking the greatest care is a very precarious operation. I find the best plan to follow in regard to these is to first place a layer of finely-broken sandstone or spar round the necks of the plants, in order to keep the leaves from being in contact with the damp soil, and then to place pieces of glass in a slanting position so as to throw off the water. During fine and dry days these should be removed for a time, and, thus treated, I manage to keep my plants in a healthy condition. All those with more or less hairy leaves, or with a fleshy rootstock, come under the category of Alpines requiring this protection, such as many of the Androsaces, viz., A. sarmentosa, lanuginosa, imbricata, villosa, &c.; Eritrichium nanum; Onosma taurica and echioides; Anthemis Aizoon; Cyananthus lobatus and incanus; Omphalodes Luciliæ; Cerastium alpinum; choice Primulas; Cathcartia; all the Himalayan Poppies (Meconopsis); the rarest of the Oxalises; South European Orchises, any many others. W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Silphium laciniatum.—What a noble plant this is so far as its foliage is concerned! It is very far from being so free to flower as S. connatum, but in good soil the leaves are really remarkable and quite distinct from those of any other. No border is big enough for it as it grows with me.—J. H.

Swertia perennis.—This seldom-seen perennial attains a height of 3 ft. in Messrs. Frœbel's garden at Zurich, the plants growing on the edge of a bed of American shrubs in bog soil. We have never seen it anything nearly so large.

Vernonia præalta.—The Vernonias bloom so late with us and so often suffer from our cold autumnal rains, that they are scarcely worth a place as border plants, but V. præalta, at least, is a fine plant for the wild garden, being so stately in habit that even if its flowers escape us, or are injured, it may still be considered worth room in a copse, or ditch, or open spot in a wood.—H.

Wintering Salvia patens.—I quite agree with the remarks made by Mr. Groom (p. 305) in reference to this matter. There are quantities of this Salvia growing in mixed flower borders here, and we never think of covering or protecting them in any way whatever during winter; in fact, we just treat them like Phloxes and they grow most luxuriantly.—Cambrian.

Hibiscus Manihot as a Bedding Plant.—This fine plant forms a striking feature in some of the beds at Kew. It is a very old inhabitant of gardens, having been introduced more than a century and a half ago from China, but it is seldom met with even in greenhouses, where formerly it was grown extensively. It forms handsome pyramidal specimens from 4 ft. to 6 ft. high, with stems beset with stiff hairs, and large five to seven-lobed leaves. The flowers are produced in dense spikes, much in the way of those of a Hollyhock, and measure from 3 in. to 5 in. across. They are a pale lemon colour, with a very dark purple centre, and they are produced very freely, and, although each individual bloom lasts but a day, they open in quick succession.—A.

A New Grass from Cyprus.—Festuca punctoria is the name of a very singular-looking Grass from Cyprus, which Messrs. Frœbel, of Zurich, have now in some quantity. It is very glaucous, more so than the well-known Festuca glauca, and the leaves very rigid and sharp pointed. Messrs. Frœbel employ it as a silvery bedding plant in certain of their beds and with a very good effect. It has some resemblance to the foliage of a Pink.

Dwarf Marigolds.—Although not general favourites, these deserve a place in our gardens from the continuous way in which they flower and the gorgeous mass of colour which they produce late in the season. When wind and wet impair the beauty of summer-bedding plants, Marigolds continue to flower for weeks, and make beds and borders gay while signs of approaching winter are everywhere visible.—J. G.

Wintering Gladioli.—May I, in reply to "K. L. D." (p. 322), state that I last year made an experiment with some of the finer sorts, which was so successful that I mean to try it on a larger scale this year? I lifted some at the usual time, took off the spawn, and immediately replanted them at a depth of 7 in. I had not one loss in the row thus treated, and had, moreover, some of the finest blooms of the varieties so treated that I had during the season.—Delta.

Schizostylis coccinea.—At this season, when brightly-coloured flowers are beginning to give place to fading leaves and richly-coloured berries, this useful bulbous plant is exceptionally welcome. We have a long row of it on which the blossoms are just expanding, and a most striking effect they produce, as most of our autumn flowers, such as Chrysanthemums, lack brilliancy of colour. It also makes an effective pot plant for conservatory or house decoration, and for cutting its medium-sized spikes are even more useful than those of the Gladiolus. It is of easy culture, and should find a place in every garden.—J. Groom, *Linton.*

Lilies in Pots.—I have read "Dunedin's" articles on Lily culture with much interest, and I should be glad if he would give me a few hints as to the culture of L. auratum and speciosum in pots. First, should I leave my Lilies, now going out of bloom, in the same pots, or shift them at once into new ones? and if so, into the same sized pots or not? Also, would he tell me what kind of soil in which to pot them, and if I should cut the stems down near to the surface? And would he recommend the same treatment for all Lilies in pots? I had a Lilium auratum last year 4 ft. high with four large blooms on it. I allowed the stem to wither away till it was quite dry, according to usual custom, and then put it for the winter in a dry cellar. This spring I potted it in a fresh pot, placing it for a time in the open air. It threw up two stems about 18 in. high only. One had four blooms, the other three. Evidently I had given it wrong treatment. Should the stems increase in size and the blooms also each succeeding year? and is there not a chance of potting them in too large a pot? I should like also to know how plants of L. auratum and speciosum are increased, if they can be, in this part of the country?—A Lover of Lilies, *Argyleshire.*

Transplanting Lilies.—Allow me to thank "Dunedin" for kindly replying to my enquiry (p. 286). I ought to have stated that I had been in the habit of transplanting my Lilies in the early part of November, which "Dunedin" thinks may account for their being better the second and third years after removal than the first. Possibly such is the case. I shall have much pleasure in trying "Dunedin's" plan of transplanting earlier. Last year I moved a few clumps in December, parting them and re-planting immediately. These did fairly well, with the exception of about a dozen bulbs, which have never shown any signs of life above ground. I examined them the other day, expecting to find that the bulbs had perished; but, no; there they are quite fresh and plump, and in precisely the same condition in which they were when planted last December, except that the roots on them at the time of removal are gone. Will they remain sound and grow next year? "Dunedin" says (p. 305) he is glad to see that I recognise the fact that Lily bulbs are every year new and successional. I have long considered such to be the case, as will be seen from a note of mine, published in The Garden in July, 1875, on the flowering of Lilium giganteum. At p. 20, Vol. VIII., I stated that after flowering the bulb perished, leaving an offspring to perpetuate its species. I was at that time fully persuaded that when a Lily bulb flowered it had completed its course, and that its existence had terminated. I quite agree with "Dunedin" (p. 304) that a Lily bulb is never dormant, as many suppose, but that it is from its earliest existence pushing on towards the flowering stage.—D. Uphill, *Moreton, Dorchester.*

PLATE CL.

GROUP OF NEW CAMELLIAS.

The Camellia is not less valuable for the beauty and brilliancy of its foliage and flowers than for its extremely easy culture and adaptability to circumstances which generally prove adverse to the well-being of other plants, natives of more genial climes. As a town plant the Camellia stands unrivalled, enduring the smoke, dust, and dull atmosphere of London without losing its freshness and vigour. There are, indeed, in existence town gardens within a radius of some three or four miles of the General Post Office where this plant grows luxuriantly out-of-doors entirely unprotected, save by the presence of some friendly wall on which it is trained. The flowers from which our plate was prepared were produced at the Waltham Cross Nurseries, where a collection of about 150 kinds is cultivated. The routine of their culture is briefly as follows: As soon as flowering is over, about the end of March, the houses in which the plants are grown are kept closed, and artificial heat given to secure a temperature of about 65° by day and 55° by night. The plants are freely watered to encourage a vigorous growth, and are thoroughly syringed with a garden engine every morning. After about six weeks, in genial weather the air from outside is gradually admitted, at first during the day only, and afterwards at night also. This insures the hardening of the wood and the formation of the flower buds. At the end of June the plants are all taken out-of-doors and placed in a shady position under a hedge with a north aspect, where the hardening process is perfected. They are brought back again into the houses early in October, and are kept entirely without artificial heat until the advent of frosty weather, when just sufficient warmth is given to prevent the frost from spoiling the flower buds. The plants are then allowed to flower naturally, no forcing being resorted to. A few flowers are produced in November, and the number continues to increase until March, when the plants are at their best, some of the large specimens bearing hundreds of flowers. When the flowering is at its height air is given to the plants at top and sides throughout the day, and, should the weather be mild, top air at night also. This materially preserves the freshness of the flowers. The houses used are span-roofed, lofty and airy, with lights for ventilation at top and sides. Many of the most striking Camellias, for effect *en masse*, are not the most desirable for cutting, proving somewhat coarse and, on close inspection, sometimes single. Such are conspicua, rosy-crimson; Donckelaari, cerise; Chandleri, crimson; reticulata, red; corallina, crimson; elegans (Chandler's), pink; picturata, blush-white; punctata, white spotted with rose; and many others.

As florists' flowers, the following are the best in cultivation:—

White.—Alba plena, fimbriata, innocenza, Targioni, alba elegantissima, and Princess Charlotte (sometimes dashed with pink, as in the plate).

Blush.—Lady Hume's Blush.

White, Flaked with Red and Rose.—Lavinia Maggi, Bonomiana, Adelina Benvenuti, Jubilee, Adamo, and Princess Clothilde.

Peach Colour and Pale Pink.—Principessa Aldobrandini, Mdme. de Strekaloff, and Mons. d'Offoy (variable).

Pink and Rose.—Eugène Massina, angustua superba, Comte Boutourlin, Marchioness of Exeter, Vicomte de Nieuport, and Comtesse d'Hainault.

Pink and Rose, Banded with White.—La Constituzione, Lucrezia Gazzarini, Passimiana, L'Avenir, Teutonia, and Leopoldo Benucci.

Red and Crimson.—Imbricata, Mathotiana, Manara, Rafia, Benneyi, and Coquettina.

Red and Crimson, Banded and Striped with White.—L'Insubria, Souvenir d'Emile Defresne, Auguste Delfosse, and Archduc Carlo.

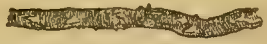
The varieties represented in the accompanying plate are Princess Charlotte (white), Eugène Massina (rose), Mathotiana (crimson), and Lucrezia Gazzarini (pink, banded with white).

Arthur W. Paul.

PROPAGATING.

ANEMONE HONORINE JOBERT.

This plant, so useful for affording cut flowers during September and October, is easily increased by means of root cuttings. In November dig up a plant from the open ground, and cut up the roots into small pieces $1\frac{1}{2}$ in. long, as shown in the annexed illustration. Well drain some pans about 3 in. deep, and fill them with finely-sifted soil, consisting of loam, leaf-mould, and sand, to within $\frac{1}{2}$ in. of the rims; press all down gently, make the surface level, lay down pieces of root all over it, and cover up to the rim; give a good watering and place them on a shelf in the propagating house. In about three weeks they will push through the soil, and in another fortnight will be ready for potting off. They ought to be kept gently moving till they can be gradually hardened off in a cold frame. Plant them out in March, take them up and pot them in September, and transfer them to the greenhouse as required, *i.e.*, if wanted for indoor decoration. H. H.



Root Cutting of Anemone Honorine Jobert.

ROSE GROWING IN FRANCE.

(Continued from page 336.)

Propagation.

Rose trees are propagated by seed, by cuttings, by layers, and by grafting. This portion of our subject, therefore, may be divided into four sections, each treating of one of the methods of propagation usually adopted. We take it for granted that our readers are already conversant with technical terms, and also to some extent with the practical operations to be performed. We shall only speak of those operations which relate specially to the Rose tree, referring those who are desirous of studying the subject further to the work of M. Carrière, of the Jardin des Plantes, entitled, "Le Guide du Jardinier Multiplicateur," a book which ought to be in the hands of everybody who practises gardening.

Propagation by Seed.—Of all the methods of propagation, that of sowing seed is certainly the most natural, seeing that it is the way employed in the majority of cases by Nature herself. It has, however, its inconveniences when we have to deal with plants which are not types, but rather variations of a fixed type. Under these circumstances the seed does not always produce the variety from which it was obtained, but gives new varieties, or varieties which have already been obtained from some of its ancestors. This phenomenon has long been made a subject of study by botanists, but it still remains a mystery. We can never tell either what kind of result we shall arrive at by fertilising one variety with another, or what is the cause of the persistence of certain types which reappear suddenly after having disappeared for several generations. But however discordant the varieties obtained from the same seed may appear, close observers can see in the new flowers certain characteristics which connect them with the parent stock. For instance, we can easily see that Louise Peyronny, Mère de Saint Louis, Auguste Mie are descendants of the beautiful Rose La Reine, which was itself obtained by M. Laffay, a well-known rosarian of Bellevue, in 1841. Gloire d'Alger has produced Rose Bobrinski, which is more double than its parent while still preserving its beautiful calyx and the general character of its leaves. General Jacqueminot, one of the most beautiful of modern Roses, has itself produced several varieties which equal the parent plant, without, however, surpassing it, and at the same time preserving family characteristics which it is easy to recognise. Unfortunately, it is sometimes by the transmission of a defect that the parentage of a plant is revealed. The Géant des Batailles, a flower remarkable for its form and colour, came into the world a prey to that terrible malady mildew, which it transmits to all its varieties. Sometimes a seedling Rose which is nearly single or a non-climber will, after being propagated by shield budding, become a double climber. We must not, therefore, be in a hurry to judge of our seedlings, seeing that grafting is necessary to give them a fixed and definite character. From these facts we may conclude that we should sow in order to obtain new varieties, and for the sake of propagating varieties already obtained.

Seed Bearers.—The seed bearers ought to be chosen from amongst the most vigorous and beautiful subjects. During flowering time they must receive especial attention as regards watering, manuring, and pruning, so that they may arrive at maturity under the best conditions. The number of seed pods left to ripen must be in proportion to the general healthiness of the tree, so as to obtain in all instances well-formed seed of good quality.

Gathering the Seed.—The seed ought to be gathered as soon as it is ripe. This may easily be known from the bright red hue of the berries. In ordinary seasons this generally happens about the end of October. The seed should always be collected before the first frosts set in, or it will probably be injured. The seed vessels of each single variety should be gathered separately, and carefully ticketed, numbered, and stored away before the others are touched, otherwise great confusion is liable to ensue. Mice are very fond of Rose seed; precautions are therefore needed against these pests if we would wish to be successful.

Cleaning the Seed.—The seeds soon become perfectly ripe if put away in a dry place, and in a few days after they are gathered they are ready for cleaning. The seed vessels are opened over a small pot, and the seeds disengaged from the husk are thrown into it. With a small fan or a coarse hard sieve we now separate the husk from the seed, shaking up the latter vigorously in order to get rid of the down with which it is surrounded. The seeds are then thrown into a basin of water, when the good ones fall to the bottom and the bad ones float on the top. The latter are collected and thrown away, and the former are drained and allowed to dry spontaneously. The seed is then mixed with dry sand or earth and put away in its numbered and ticketed pot in a dry place out of the reach of rats and mice. Thus treated, the seed is being slowly prepared for its future germination. When the proper time arrives it is sown, earth or sand and all. The seed of the Rose is a small, spherical or egg-shaped body with flattened sides and angular edges of a dirty whitey-brown hue. The number of seeds in a capsule varies with the species, but, generally speaking, the Roses with globular seed vessels give more than those with longer ones. The dead seed generally amounts to about one-third of the crop.

Time of Sowing.—The most favourable time for sowing Rose seed is from the middle of October to the middle of December. The method to be employed is regulated by the mean temperature of the locality, the kind of soil, and other general conditions.

Sowing in the Open Air.—A border of light ground with a favourable aspect is dug and the surface raked smooth. It is then covered with a layer of fine sand or heath mould of about 1-4th of an inch in thickness, and beaten down gently with the back of a shovel. The border is then divided into as many squares, 3 ft. to 10 ft. in length, as there are varieties to sow. The edges of each of these squares must be raised above the centre of the bed. The seed having been sown broadcast, it is sprinkled with heath mould or sand to the depth of $\frac{3}{4}$ in., on the top of which is spread a layer of dead leaves 6 in. or 7 in. thick. The layer of leaves keeps the seeds sufficiently damp to favour germination, and protects them from the frost. Towards the end of March, if the weather will allow of it, the leaves are taken away, and are kept in reserve in the paths in case of frost; later on they are taken away and allowed to rot. The beds with their young plants must be kept in a state of the greatest cleanliness, and watered as often as they require it. The soil ought to be always kept fresh, but not damp. In April or May the young plants are pricked out into other beds, which are divided into as many compartments as there are varieties. The young Roses are placed in rows 4 in. apart, each plant being $3\frac{1}{4}$ in. from its neighbour. They must be watered and shaded for several days after transplanting to help them to strike.

Sowing under Bell-glasses.—This method of sowing is, perhaps, the best. A border having been prepared, as described in the directions for sowing in the open air, we cover it with rows of the bell-glasses used for growing vegetables, pressing them down so as to leave a strong impression of their edge. The seed is sown in the circle so marked, covered with heath mould, and pressed down (the hand-glasses, of course, being replaced), the intervals between being filled up with dry stable litter or dead leaves, of course leaving the upper portions of the glasses uncovered. In the month of March, weather permitting, the litter or leaves are taken away and the bell-glasses lifted up to dry the soil and change the air. The ground is weeded and watered if necessary, and in the month of April the bell-glasses are taken away altogether, as if they were left over the young plants much longer they would become weakened. No matter how much pains we may take, we must always make up our minds to see a large number of our seedlings wither away and die. When any of the young seedlings are attacked by mildew, they must be sprinkled with flowers of sulphur.

Sowing in Frames.—Roses may be sown in cold frames just as they are under bell-glasses, the border being divided into compartments, as directed above. Sowings under frames must be looked well after during the winter, for all the mouse tribe, especially the field mouse, are particularly partial to Rose seed. As soon as we are certain that the frames are visited by these pests, we must clear them away by means of some kind of trap. Seedlings of Tea Roses, Bourbons, Noisettes, and climbing hybrids, if grown under favourable conditions, are likely to flower the first year; the other varieties not before the second year. The blossoming period ought to be watched for with the greatest attention, and those plants marked which show any distinctive character whether in the foliage or the flower. The shoots of these plants will furnish the shield buds for the late part of the season. These shoots must be managed by pinching off the buds and leaves in such a way as to obtain well-grown buds. Care must also be taken to choose stocks whose vigour of growth is proportionate to that of the Rose seedling from which the buds are to be taken. It is of the utmost importance that the greatest care should be taken with the first budding, without which the new variety will not be permanent. Except all the conditions be favourable, its character will be undecided, and the hopes raised by the seedling will be doomed to disappointment. J. Lachaume.

GARDENING FOR THE WEEK.

Greenhouse Plants.

Where due provision has been made during the summer months by working up a good stock of soft-wooded subjects, such as Chrysanthemums, Heliotropes, Salvias, Cinerarias, Primulas, Solanums, Perpetual Carnations, Mignonette, Eupatoriums, &c., there will be no lack of free-blooming plants to render the greenhouse or conservatory attractive for several months to come. In order to get these in succession and prolong their season as much as possible, it will now be necessary to forward those that will bear a little heat, and keep back others by placing them in cool, airy positions, thus retarding their flowering to a later period. Few plants are more accommodating in their nature, or will stand either kind of treatment better than the old Richardia æthiopica, which, if properly prepared by being grown in the open ground, may be made to afford a constant supply of its lovely pure white flowers from now till May or June, at which time they have to be separated for planting to be again ready for the following winter. Richardias will bear quite as much heat as any stove plant, and appear to enjoy it, but when subjected to it stronger than is requisite to get them early in bloom, they are apt to become drawn both in leaf and flower-stem, which not only spoils their appearance, but renders them incapable of bearing the low temperature of the conservatory or greenhouse. In cases, however, where they are only wanted for cutting this drawn appearance is but of little consequence, as it does not materially affect the quantity of bloom they yield nor the time they last in water when cut, although most other plants would at once show the effects of such a style of growth. Their exception in this respect is not much to be wondered at when we consider the great substance of the flower and how readily water is conducted to it by the large sappy stem on which it is supported. Where large quantities of cut bloom are required, and room for producing it is scarce, as is the case in most places, there need be no hesitation in arranging plants of the Richardia a long way from the glass, and in positions that would be of little use for other purposes.

Miscellaneous Plants that are yet out-of-doors, and at all liable to be injured by frost, ought to be at once placed in the houses, pits, or under some temporary shelter; such are Dracæna australis, Agaves, Phormium tenax (both the green and variegated forms), Aralia Sieboldi, and A. Sieboldi variegata. Those with gardens, either large or small, who have the convenience of only a single greenhouse, will do well to grow plants of the above description, on account of their thorough adaptability to serve a double purpose. In the winter, when placed in a greenhouse or conservatory, amongst the usual kinds of flowering plants, they contribute much to the general effect by their dissimilarity in appearance; and in the summer, out-of-doors, with their pots plunged amongst the bedding plants in the flower garden, or in vases, they do much to relieve the want of diversity in form and superfluity of colour. With such subjects as the above an ordinary plant house can from time to time be changed in general aspect by altering the position the plants have occupied in it, so as to remove the sameness resulting from seeing certain plants always in the same places. They also possess other advantages: they are easily grown; are less liable to suffer from neglect than many plants; and they are but slightly troubled with insects.

Salvia splendens, one of the most useful and showy of all autumnal-flowering greenhouse plants, is now in great beauty, and will remain so for some time to come, if well cared for and kept from damping, to which it is very subject, unless fully exposed to the light and kept in a house moderately warm with a free circulation of air. If confined to small pots, they should now have plenty of manure water, to enable them to push forth bloom on the lateral branches, which they will continue to do when so assisted till Christmas, or even later, when the variety known as S. Heeri will be coming in to take their places. These will be growing fast for the next month or so, and should have a light position afforded them with plenty of room between the plants, or they soon become drawn and bare below, which greatly detracts from their appearance. To keep their leaves of a healthy green colour, they should be freely supplied with liquid manure, as the pots they now occupy will be very full of roots.

Large-flowered and Fancy Pelargoniums. — These, although more difficult to grow well than the zonals so much in favour of late years, are much more varied and beautiful in their colours and general habit of growth than the unlimited numbers of new scarlet and pink zonals that yearly make their appearance, many of which scarcely possess a shade of variation in colour from others that have preceded them. The great difference in the treatment required by the fancy and large-flowered kinds from the zonals is, that, through their growth being so much slower than that of the latter, they do not require, nor will they bear, the same quantity of water at the roots, especially during the autumn and winter months, as the others; and many, whose practice has been confined to the cultivation of the zonal Pelargoniums, have at first found a difficulty in managing the other varieties all through the autumn and winter. After the usual potting about the end of August, particularly in the case of plants that have been cut back freely, and a considerable portion of the roots removed, these will not have really filled the new soil with roots, and must be watered very sparingly for the next four months. It is not an easy matter to describe the necessary quantity of water required by any particular family of plants grown in pots, but in the case of these Pelargoniums a safe course to follow is not to give any water so long as moisture can be detected in the soil by pressing the surface with the fingers, as, from the hard potting they require, the pots will very often not respond to the usual test of rapping. If ever the soil in which these plants are grown become too wet at this season the roots will most likely perish. To strengthen them still further, they should be elevated as near the roof of the house as possible, and be kept tied out so that every leaf shall receive its due proportion of light.

Chrysanthemums in most places this year are late, which is an advantage so far as keeping up a supply of flowers until the end of the year is concerned, but to secure this they need some additional care in their treatment. Those that are the latest in forming their bloom-buds are much better out in the open air, so long as they can be protected from frost; to secure this protection a slight temporary framework of wood should be fixed up to the south side of a wall or building and be covered overhead with canvas or any light material that can be removed during the day. An old blind that has been used for shading a plant house or Peach wall will, in most cases, be quite sufficient to afford the necessary protection for some weeks to come. The advantage gained by placing the latest flowering of the stock in such a position is twofold: it prevents the houses getting overcrowded, and the plants thus out in the open air do not become drawn and a prey to mildew, a condition to which they are very subject when placed under glass for a considerable time before the blooms increase in size. The flowers should be thinned out as soon as they are large enough to lay hold of, reducing their number according to the size of the pots and the description of the plants. The largest-flowered kinds should be more severely thinned than the medium-sized sorts, and these again more than the Pompones. The whole ought to have their buds reduced to about one-eighth of their number, and the plants must be regularly supplied with manure water of a stronger description than that used for other plants in pots. On no account should they be allowed to flag for want of moisture, or the bottom leaves, as well as the flowers, will be sure to give evidence of such neglect. The unremitting attention thus recommended for subjects so easy of cultivation as Chrysanthemums may appear to some to be more than necessary, but only by such treatment can these beautiful autumn and winter flowers be grown in the way they so well merit. There is one great benefit derivable from thinning the flowers not generally noticed, and that is, where this is well and judiciously carried out, not only are the blooms much finer, but individually they retain their freshness considerably longer, on account of the greater substance in the petals resultant from all the strength of the plants being concentrated in maturing a limited number of flowers. Should any mildew make its appearance, dust the affected leaves with flowers of sulphur immediately; delay in this respect will be certain destruction to the foliage before the blooming is over.

Carnations in Pots for flowering during the winter should not be exposed to frost or excessive wet. Frequently there is an impression that such plants as these, and others of a similar character that are hardy, will, when cultivated in pots, bear without injury the extremes of wet and cold, as if they were in the open ground, but such is by no means the case; when the roots of any plant are confined in a pot, even when thoroughly drained, and the soil of an open, porous description, they will perish if exposed during very wet weather, while they would receive no injury if planted out in the open ground. They should now be placed in a good light pit or frame until they can receive the necessary heat to induce the flowers to open; this must be regulated by the time they are required and the means at command. To do justice to these valuable sweet-scented flowers, when being brought into bloom they should occupy a place with their tops within a few inches of the roof glass, where they will obtain plenty of light, and a temperature of about 50° during the night, with a rise of 10° in the day, and if possible a little air night and day, otherwise the plants become drawn and spindly, in which state they will not afford the full succession of bloom that they will give if their treatment be such as will keep them stout and bushy.

Roses.

Planting Roses.—Relative to the best time for moving Roses, as in other things, there is often a difference of opinion, many considering it better to wait until the leaves have fallen, others urging that the sooner after the commencement of October they are moved the better. In my own practice I have found it best in this, as in almost every other gardening operation, to be ruled by circumstances. If the Roses have to be moved simply from one part of a garden to another, with the ground which they are intended to occupy properly prepared beforehand, taking the plants up, say half-a-dozen together, and at once transferring them to the new situation, giving them at the time a good soaking with water, treading the soil firmly about the roots, and securing them with a good stake each, the earlier they are removed the better they will flower the next year, as well as being less likely to suffer should a very severe winter follow their being transplanted. In support of this, it may not be out of place to here mention a case that came directly under my own observation. In the autumn of 1860 some extensive alterations necessitated the removal of a number of standard, half-standard, and bush Roses; some of the latter were grafted low down, others were on their own roots, many of them were large plants, the standards with much larger heads than where the object is to grow flowers for exhibition; consequently it may be said that they were less calculated to bear removal without injury whilst full of leaf. They were moved the third week in September. As will naturally be supposed, although well watered, the leaves flagged considerably and a good portion came off sooner than they otherwise would have done. The winter following, as many have occasion to remember, was intensely severe, the thermometer in the place where the above Roses were transplanted falling down 2½° below zero. Not a single plant of those that were moved early, excepting some half-dozen Tea varieties, were injured in the least, whilst such even of the hardier Hybrid Perpetuals that I had, which were not removed, were, like most other people's, far the greater portion killed outright; in fact, not one in a dozen was left alive. The moved plants from the check they thus received were evidently rendered better able to withstand the extreme cold than those that were undisturbed, and kept on growing vigorously until later. Since then I have invariably adopted early moving where it could be done under such conditions as above described, as, without a single exception, I have found them flower more freely than when moved later on. I have frequently examined the state of the roots of these early-moved plants about the middle of November, and in all cases they had made new roots from 1 in. to 2 in. in length, a condition that will at once satisfy those acquainted with the nature and requirements of hardy plants, that when Roses are removed sufficiently early to admit of a quantity of new roots being formed in the autumn, they are in a much better state to break strongly in the spring, and flower proportionately freely than if moved late, when the leaves were all off, and there is neither warmth in the air nor soil to induce the formation of new roots, in the place of which these lay dormant until spring with the shoot growth naturally commencing before there is any root development to assist it. Although strongly advocating the replanting of Roses thus early, where after taking up they can be immediately transferred to their new position, it would by no means answer to carry out the work so early with plants that had to be got in from a nursery or elsewhere that entailed the necessity of their being some days out of the ground, for, under such circumstances, unless the roots were enveloped in a considerable body of damp material, the bark on the young wood would shrivel, the result of which would be serious injury, or death if the shrivelling occurred to a considerable extent. But, after the present time, I should not for a moment hesitate getting in Roses from the usual sources. One very considerable advantage in early orders and early planting is that in the trade it is usually "first come, first served;" and those who give their orders and have their plants taken up first have a decided advantage over those who are served when the stock has been picked through.

Kinds to Plant.—As to the varieties which it is advisable to plant, it is well to be guided by the nature of the soil and climate. Many people make their selections of sorts from the splendid flowers they see exhibited at the Rose shows, but it is well to bear in mind that the best seen in the principal competitions are usually grown where both soil and air are especially adapted to the cultivation of Roses, in addition to which more than ordinary skill is often brought to bear in the production of the flowers; and, again, many of the handsomest blooms seen in the competing boxes are of varieties which it is anything but desirable for the general cultivator to grow, inasmuch as, though the flowers seen may be large and fine, they are nevertheless the produce of sorts naturally weak and not calculated to bear through the season many blooms even fit to put in an ordinary bouquet. When such as these get into the hands of less skilful growers, and planted where the conditions are less suitable, it is simply a waste of both time and money, as, from the time they are planted, they gradually dwindle away and die; consequently, it is very much better to stick to well-proved kinds, and though new varieties have an interest attached to them, it is much better to see them tested under the conditions of ordinary cultivation before having them.

Selection of Plants for Different Soils.—The superiority of one kind of stock over another on which to grow Roses in a great measure depends on the character of the soil. Such as is of a strong, heavy, rich nature has, by long experience, proved to be the most suitable for the Brier; whereas on light land that is of a sandy or gravelly description, the Manetti will frequently give fair results where the Brier would fail. A good deal has been said of late years about the superiority of seedling Briers, that is, the ordinary Brier raised from seeds by cultivation in preference to such as are self-sown and obtained in the usual way, as are the stocks for standards and half standards. The seedling Briers may be said almost exclusively to be used, worked low down, for bushes, and the only advantage they can have in imparting greater strength to the Rose is that the seedlings naturally are furnished with a great quantity of more roots than the stocks dug up in the ordinary manner are possessed of, and I have not the slightest doubt that stocks grown from cuttings for these dwarf bushes would be equally well furnished with roots as those raised from seed. But the persistent advice which I would give in the matter to all who grow Roses for ordinary purposes is to as far as possible dispense with stocks altogether, growing them on their own roots, by which all the loss of strength involved in the production of suckers and the continual watchfulness and labour entailed in their removal, with the periodical taking up often found necessary with standards and half standards, to cut away the sucker-shoots formed by the stocks, is avoided, in the place of which every strong shoot that comes up from below the soil produced by plants on their own roots is a decided advantage, as from these are furnished in the ensuing year the finest individually, as also the largest number of flowers, permitting of the old and weaker wood being cut away.

Depth to Plant.—A matter connected with, and of the greatest importance in Rose planting, of which it may be well to remind beginners in their cultivation, is the depth to which their roots are covered, especially when grown on the Brier, either as standards, half standards, or worked low to form bushes; the Brier, more than most plants, cannot bear its roots being deeply covered; if the collars of the plants are placed 2 in. below the soil that is enough, the extremities of the roots gradually being put a little deeper. In the case of those that are grafted or budded on the Manetti stock, which, as above advised, is usually employed on soils of a lighter character not so well suited to the Brier, they may be planted 3 in. or 4 in. deeper; but, so far as I have always been able to observe, anything beyond this is objectionable in its results.—T. Baines.

Indoor Fruit Department.

Pot Vines placed in heat about the beginning of the month will be showing as yet but little signs of growth; do not, however, increase the temperature in order to force them on more rapidly, for the slower they start at first the stronger will be their growth. If a slight acceleration be required it should be after the bunches are formed and the berries are set. Be careful not to over water; at present the soil should be kept rather dry than wet, there being as yet little root action. When water is given it should never be colder than the bottom heat if the plants be plunged, or the soil in the pots. If this be 75° the water should be 80°. Chills in all forms must be avoided; young Vines which are propagated from eyes in the spring, and grown on in pots throughout the summer for planting next spring, should now have ripened their wood. Those fully matured should be wintered in a cool airy house. An open shed, covered at top, answers very well for this purpose. The canes of the Muscat take longer to ripen; these and any other sort not yet brown to the extreme points should be retained in heat until they acquire that condition. It is a mistake to move Vines from a warm house to a cold situation before they are thoroughly ripe. In such a case they are starved into rest in a way that is never productive of good results. Pines of the Queen variety intended for early starting and fruiting, should now, as a rule, be perfectly at rest; see that the temperature does not exceed 50°; for, if not allowed to exceed that, they will start into fruit with greater certainty when a higher temperature is applied to them. See that the soil in which newly-rooted suckers are grown does not get in bad condition. The bottom-heat for such stock may now be reduced 10°, too much growth being undesirable at present; slow, substantial, firm growth is what is needed to brave the winter season successfully. Bear in mind that too much water at any time is as injurious as too little.

Melons.—Unless these are ripened during the present month or the first half of the next one, they cannot be expected with much certainty. Therefore maintain a night temperature of at least 70°, and allow an advance of 15° by day with sun-heat. When they begin to ripen, keep the house rather dry; but still retain a brisk heat. Ripe Melons at this season may be cut, and kept on a shelf in the fruit-room for some time without deteriorating.

Cucumbers.—The earliest winter plants should now be bearing, and the others should be well established. Good turfy loam, mixed with leaf-soil, or some thoroughly decayed manure, but withal, not too rich, suits them well, and around the necks of the plants the soil should rise in little mounds. Keep the soil moderately moist, but avoid over-watering, and only syringe the plants in fine weather. Do not allow them to set more fruits than they can well carry, and, until they are strong enough for fruiting, pinch all off. With dustings of flowers of sulphur on the affected parts, counteract mildew, and, if the stock of plants be deficient, increase it from cuttings, not from seed.

Strawberries.—By this time these should be thoroughly established plants, with plump and hard crowns, and well-seasoned leaves. The pots also should be quite full of roots, as cold and heavy rains are injurious to them; the first to be started, and also the weakest plants, ought to be placed in cold frames on sifted coal ashes, and near the glass. The main supply may be arranged in the side of a ridge, formed of ashes, so that they will be freed from heavy rains, and kept in better condition for forcing.

Kitchen Garden.

As ground is cleared it should be dug over for the winter. In doing this be guided by the nature of the soil; where both surface and sub-soil are naturally open and porous it may be laid up in the ordinary narrow ridges. Treated thus it gets mellowed by the action of frost, but in heavy, retentive soils, the rains are thrown off the ridges into the alternate hollows, which become saturated, and in the spring, when the ground is required for cropping, it is not in proper condition for the reception of seeds. In such a soil it is better not to ridge but to dig it over, keeping it level, but at the same time turning it up roughly and leaving it as open as possible without attempting to break the clods. All ground that is used for vegetable crops should be trenched every three or four years, 2 in. of fresh earth being brought to the surface on each occasion. This more particularly applies to old gardens, where, if it be not done, the surface becomes exhausted. It is necessary thus to discriminate between old and new gardens, as, in the latter, at a comparatively small depth, the soil is yet crude. To bring any considerable quantity of this to the top, and to more or less bury the surface soil that has, by stirring and exposure to sun and air, together with the application of manure, become better adapted to the requirements of plant life, would be a serious mistake, which would be most injurious in its consequences to the crops for a year or two afterwards. With such land as this, that is yet deficient in depth of aërated soil, it is better not to bring much of the under portion to the top, but in trenching to loosen about 6 in. of the bottom that has not previously been stirred. In this way it will gradually be mellowed and the manurial elements that are washed down from the surface are incorporated with it, in which condition it may gradually be brought up and mixed with the top soil. In trenching ground of every description, it is well to put some manure in the bottom; its admixture with the soil beneath very much improves the latter, and here it answers as a store for the support of the roots during dry, parching, summer weather. This operation of digging and trenching in the autumn is of the greatest importance to successful vegetable culture, and never should be delayed, after the ground is cleared, longer than can be avoided, as it is much more effective and can be carried out with more ease and expedition before the land is soaked by the rains that may be expected towards the close of the year. In addition to the effects it has in aërating and pulverising the soil, it is the means of destroying quantities of slugs and wireworms and their eggs, and also weeds that have newly vegetated. Where a high system of culture is carried out, weeds and animal pests are alike reduced to the lowest point by frequently stirring the soil. The latest Apples and Pears that may yet be ungathered should be got in and stored, as has been previously directed.

Extracts from my Diary.

October 21.—Sowing Mustard and Cress. Getting a few Hyacinths into gentle heat. Putting a good covering of leaves and long litter on early Vine border. Pruning Vines in second early Vinery and stripping off all loose bark. Covering up Lettuces and Endive to blanch. Clearing off late Peas and storing away the best of the sticks for another season.

Oct. 22.—Potting Ashleaf Kidney Potatoes that had been previously started in gentle bottom-heat. Laying down new turf where required, and taking up old where unlevel and relaying it. Cutting back large deciduous trees where overhanging each other, and lightening the heads, where too heavy, to prevent wind from breaking them. Turning manure for Mushrooms, and gathering in the last of the Apples and Pears.

Oct. 23.—Washing glass and paint in second early Vinery with soft soap and hot water, and painting the Vines with a mixture of sulphur, soft soap, and Tobacco water, to which a little clay has been added to thicken it. Looking over the fruit room and arranging it for the winter. Roping Onions, cutting shreds, pointing nails, and making labels and pegs when the weather is wet.

Oct. 24.—Potting clumps of Lily of the Valley, so as to be ready for forcing. Dividing some old Lobelia plants of the pumila type and putting them in small pots. Earthing up French Beans. Spawning Mushroom bed and moulding it over. Getting up a little Chicory and Dandelion ready for forcing in pots. Rolling down firmly all gravel walks that have been broken up or newly made.

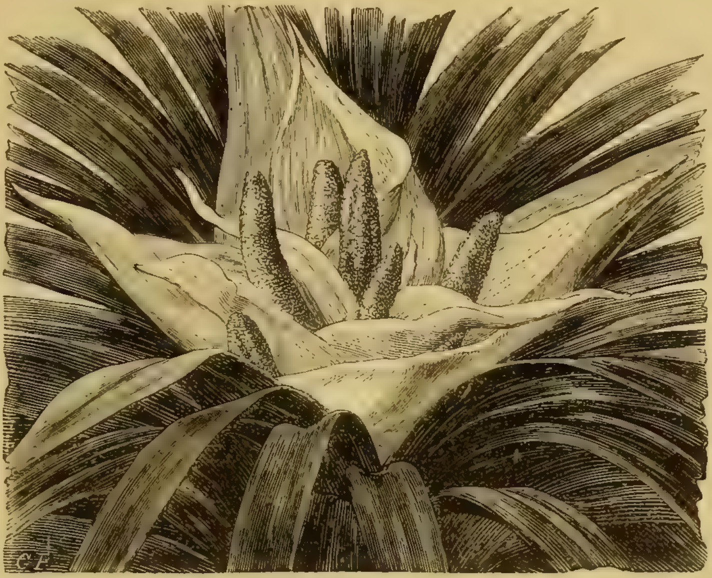
Oct. 25.—Sowing French Beans in pots. Getting up Dahlias and placing them in open sheds to dry. Clearing off dead plants from flower borders and planting them with spring flowers, viz., red and yellow Wallflowers, Silenes, red and white Daisies, Myosotis, Iberis, Alyssum saxatile, Pansies, and Nemophilas. Earthing up Celery when the soil is dry and in a workable condition. Clearing off Lettuces and Endive that are gone too far for use.

Oct. 26.—Potting off cuttings of Hathaway's Excelsior Tomato. Filling frames as they become empty with Lettuces and Endive. Getting bulbs planted, such as Hyacinths, Narcissi, Crocuses, Tulips, Snowdrops, &c. Cutting back shrubs in new plantations where growing too closely together, and, where planted too thickly, removing them and filling up gaps elsewhere with them. Fruit in use for dessert: Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

THE INDOOR GARDEN.

FREYCINETIA BANKSI.

This is one of the many remarkable vegetable productions of New Zealand, a country possessing one of the most interesting floras of any part of the world. A noteworthy feature of the flora is the number of outlying members of tropical or subtropical families; and Freycinetia is one of them. The genus Freycinetia is generally considered as forming a tribe of the Pandaneæ, or Screw Pine family, though some botanists give it the rank of an independent family, because the fruit contains several seeds instead of only one. The species of Freycinetia differ entirely in habit from the true Screw Pines, being straggling or climbing shrubs with slender stems. F. Banksi, the only New Zealand species, is a climber, inhabiting warm, humid situations in the northern island of New Zealand. Allan Cunningham states that it there, by means of the twisting radicant stems, ascends to the summits of the loftiest trees, attaching itself principally to the swamp Pine (Podocarpus dacrydioides), whose straight, almost undivided, trunk often rises to a height of 120 ft. to 150 ft. The narrow, prickly leaves are from 1½ ft. to 2 ft. long, and borne in dense tufts at short distances apart on the twisting stem, which throws out numerous aerial roots. The flowers appear in the centre of the tufts of leaves, as shown in the accompanying engraving, and individually they are small and inconspicuous; but as they are very numerous and borne in dense spikes (spadices), like many Aroids, they make considerable show. The male and female flowers are borne on separate spikes, and perhaps on different plants. But the spathe-like bracts, of which there is one attached to the base of each spike, form the most conspicuous part of the inflorescence. Moreover, these bracts are fleshy and edible. Some years ago Dr. Hector sent living plants to Kew, two of which flowered in 1873, one bearing male and the other female flowers. The bracts of the male flowers were pure white, those of the female pale lilac. Whether this was the first time the plant had flowered in England, I have not been able to ascertain; but it flowered in 1872 in the Garden of Plants, of Paris. The bracts vary from 6 in. to 9 in. in length, and 2 in. to 3 in. in breadth, when spread open. All travellers agree in saying that the natives are exceedingly fond of them to eat in a raw state; and it is stated that the colonists make a very lucious jelly of them, which tastes like Strawberries. In a note in Kew Herbarium, Dr. A. Sinclair says that they are much prized by the natives, who in some parts of the colony taboo the forests where they grow, till a certain day, when the bracts are ripe, the tribe to whom the forest belongs rush into them at a given signal and satiate themselves with their favourite *tawhara.* The strong, fibrous leaves are used for basket-making. Although this Freycinetia grows to a great height in its native country, it flowers under cultivation when only 3 ft. or 4 ft. high. W. B. Hemsley.


Freycinetia Banksi.

Primula denticulata in Pots.—This plant is, as is well known, hardy enough to stand unprotected fair season, will flower tolerably well. It is seldom, however, that it there retains in full perfection the delicate, powdery bloom which covers the flower-stem, and which constitutes its chief charm. It should be grown where it enjoys perfect immunity from heavy rains and driving winds. Pot several good crowns in 4-in. and 6-in. pots, using rough, fibrous loam, and fill the pots nearly half full of drainage. Winter them in the coolest end of a greenhouse, or in a frame, and water them pretty well every time you come near them; the constant saturation is the main element of success. Under this treatment, both foliage and flowers will attain a high state of development.—J. Cornhill.

SOLANUMS AND THEIR CULTIVATION.

Were it said that Solanums are easily cultivated, perhaps not a few might say that the statement did not agree with their experience, and yet some find little difficulty with them. How, then, is it that we find these useful berry-bearing plants so badly grown in places where almost everything else is noteworthy. As a family they are equally suitable for the conservatory, drawing-room, or dinner-table, and few plants last longer in close rooms than they do. To get up a good stock of them is an easy matter, and that is best accomplished by seeds, which should be sown about the first week in February in well-drained seed pans. The soil should consist of loam and leaf soil in about equal parts, put through a ½-in. riddle, with a little sand added to keep it open. The seeds should be covered about ¼ in. deep; the pans should then be placed on a shelf in a warm greenhouse or in a Cucumber bed. It is a good plan to cover the pans with squares of glass, as by so doing the seeds germinate quicker than they otherwise would do, and it keeps mice from them. In about three weeks the young plants will be ready for potting off into 3-in. pots, *i.e.,* if the seeds have been good. The soil should be the same as that in which the seeds were sown. When potted they should be put back again into the Cucumber bed and kept near the glass. In about a fortnight they will have got established and grown a little, when the centre of each should be pinched out, which will cause them to branch out. They should then be moved into a cold frame, or placed on a shelf in a cool greenhouse, where they can get plenty of light, be kept from cold draughts, and be carefully attended to with water, both at the roots and overhead. If green fly make its appearance, which it is almost certain to do, we find the easiest way of getting rid of it to be lifting the plants down and brushing them clean one by one with a small camel's-hair brush. This is an easy and certain cure. When the plants are in a young state stop all their branches at the third joint, which will lay the foundation for bushy plants. In a week or ten days after being moved into cool quarters they will require to be shifted into 4-in. pots, which should be well drained. The soil should be fibry loam and a little leaf mould, and no sand need be used. Pot firmly and replace them on the shelf, where they may remain for about a fortnight, and then be plunged in coal ashes out-of-doors in full sunshine. Here they may stop all summer, and will require no attention beyond giving them water in dry weather. This being the first year they must not be allowed to fruit; therefore all flowers must be picked off as soon as they appear. About the middle of September they should be taken indoors and placed on a shelf or in some position near the glass in a cool house or pit from which frost can be excluded, and where they should only get a moderate supply of water—just enough to keep them from flagging—until about the first week in February, when they should be slightly pruned and placed in a gentle heat. Here they should get no water, except a dewing with the syringe twice a day; this will cause them to break freely into fresh growth. When the young shoots are about ½ in. long the plants should be partially shaken out and repotted in well-drained 6-in. pots. The soil should consist of pure fibry loam broken into pieces about the size of Cob nuts, with a little sand added but no leaf-mould, as it induces them to grow long jointed; they should be firmly potted and replaced in heat; water sparingly, and shade when the sun is bright, until they get established in their new pots, which will be in about ten days or so; they can then be moved into a cold frame, and kept there until the middle of May, by which time they will be good bushy plants, provided they have been stopped regularly. They should then be moved to their summer quarters, viz., a square bed made up out-of-doors, about 2 ft. high, composed of cow manure and leaves in alternate layers, which will create a gentle heat. In this the pots should be plunged up to their rim at a good distance apart, so that as they grow they may not crowd each other; the bed should be in a sheltered situation where the sun can shine on it all day. Here they should be allowed to grow and flower as they like. We find it a good plan to give them a light dewing with the syringe on bright days about two o'clock. This helps to set the fruit, and, besides, if there be any appearance of green fly a little Tobacco liquor put into the water used for syringing will kill it. This should be applied when the sun is hot, at which time the effect is much greater without injury to foliage or flowers than at other times. The gentle heat of the manure will soon induce them to flower, and the first and second lot of blooms produce the largest berries. If the variety be good, the blossoms will set in clusters of from three to five; the points of the shoots should then be pinched off at the first joint above the uppermost clusters, and the pots should be lifted up and let down again to prevent their roots getting established too firmly in the manure. This should be performed twice during the summer. About the middle of September they should be taken up, and after their pots have been well washed placed in a cool greenhouse or pit where they are exposed to full sun until their berries are coloured, when they may be moved to the conservatory. There are several ways of treating them besides this; one in particular, the planting-out system, I practised for two or three years, and with a considerable amount of success, but the planting-out plan is not to be compared with plunging the plants out in summer. H. E. A.

BOUVARDIAS AT CHRISTMAS.

These are the best plants in cultivation for producing large quantities of delicate and charming flowers from this time until the new year. No one who has a greenhouse should be without Bouvardias; they are easily cultivated, and are unsurpassed by plants of any other kind. In a cut state their flowers are all that can be desired; for this purpose we grow large quantities of them, and they answer well for decorating the conservatory until they are cut, as they do not go out of flower in a day or two, nor do they come all into flower at one time; on the contrary, one good plant will yield a succession for some weeks. The flowers are, moreover, of all shades of colour, and many of them are as finely scented as those of Stephanotis floribunda. In fact, altogether it is quite impossible to over-estimate the value of Bouvardias, and wherever choice flowers are wanted, from this time and for some months onwards they should be grown by hundreds. We double the number of our plants every season, and I do not think we will ever have too many of them. Some plant them out during summer, and others grow them in pots; we grow them both ways with success. Where plenty of time can be devoted to them, the pot system is the best; but when this cannot be spared, they should be planted out. Planting them out, however, is a matter which need not be discussed; but lifting and potting them, as well as their treatment, for a short time afterwards, are matters of importance at the present time. It is a mistake, I think, to lift them too early, especially if the flower buds are showing up prominently, and, as a rule, it is not desirable that they should bloom much before November. It is not too late to lift them about the middle of October, and about a week previous to doing so each plant should be cut all round, 4 in. or 5 in. from the stem, with a spade. This prevents the plant, when finally lifted, from receiving a check, which must be particularly guarded against, as the slightest check often causes the bloom-buds to drop or fail to open properly. Placing them in strong heat just after they are potted has the same bad effect; the best place in which to put them after they are potted is a cold frame, which should be kept quite close, and partially shaded, if necessary, for a week or ten days after potting. When treated in this way, all sizes of plants may be lifted and grown on successfully. Bouvardias are very subject to green fly, and it is generally about this time of the year, when they are being housed, that it attacks them worst; therefore it is always a good plan to fumigate them two or three times before the flowers open, an operation that will keep them clean until they have done flowering. Plants which have been grown in pots all summer should be treated in the same way. As it is desirable that a succession of choice flowers like these should be had as long as possible, the plants should be introduced into heat at different times, the late-blooming batches being kept in a cool place until a week or two before they are wanted in flower. At all times the flowers open freely in a temperature of 60°, and remain much longer in good condition than when placed in a higher temperature. Cambrian.

STEPHANOTIS FLORIBUNDA IN BASKETS, ON ARCHES, AND ON WALLS.

This is the very best, sweetest, and most useful and pliable of all climbers. If a choice specimen be wanted, no plant forms one sooner or to more strikingly effective purpose. It looks well on globe, balloon, half-spherical, or flat trellises, or even trained more loosely to a few stakes, and the branches allowed to trail with considerable natural freedom. The Stephanotis flowers remarkably well treated in this free and easy style. It is also admirably adapted for the furnishing of large baskets, allowing the shoots to depend freely over the sides to a length varying from 1 ft. to 3 ft. or more. It is surprising that large basket plants are not used more freely than they are for the decoration of large plant stoves. The weakest place in the majority of these is found between the heads of the taller specimen plants and the drooping sprays of the roof climbers. Introduce between these a few large basket plants of Stephanotis floribunda, and the effect would be immensely enhanced. What, for example, could be more welcome than a snow-like shower of flower-covered branches of the Stephanotis falling amongst the spray of scarlet or pink Passion-flowers, or such magnificent old stove climbers as the Ipomœa Horsfalliæ, one of the grandest and far too seldom seen stove plants? The Stephanotis is seldom used for baskets, though it is one of the most effective plants for the purpose. Again, plants allowed to droop in accordance with their natural habit look well depending from brackets, or elevated shelves, or masses of rock or corkwork in stoves. The plant has an appearance in these new positions so different from what it usually has, that it is difficult to recognise it as the same. Again, few plants equal the Stephanotis for the clothing of walls. Its glossy leaves alone make it rank high as a wall clother; and when to these are added its myriad bunches of waxlike flowers of snowy whiteness, the effect is rich in the extreme.

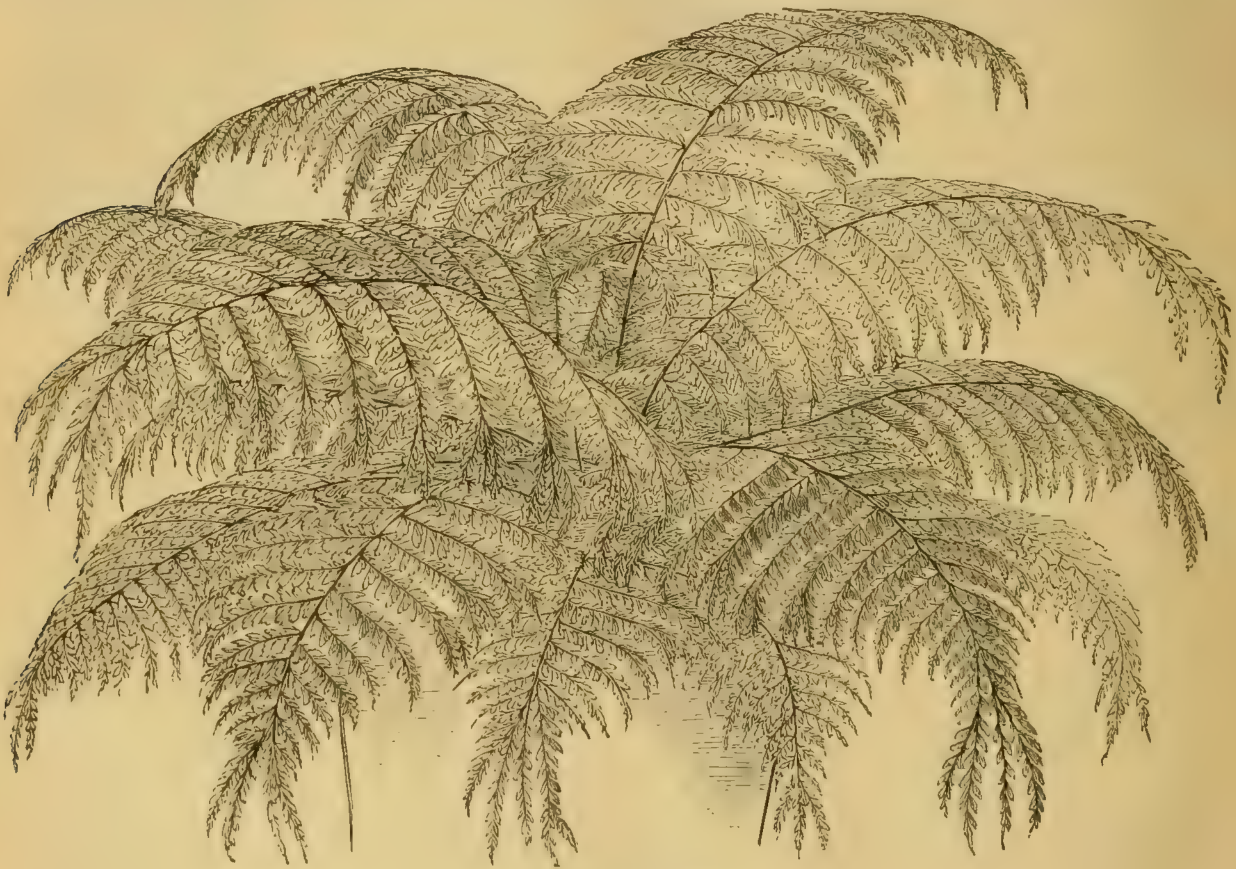
For the covering of arches the Stephanotis is equally well adapted. Arches are always effective in plant stoves; they may be defined as the only lines of beauty in many houses that break the monotonous stiffness of straight rafters, or render them endurable through the welcome change of curve, which is refreshing as the sight and sound of a waterfall on a sultry day in June; and arches never look more lovely than when clothed with the verdure and draped with the beauty and sweetness of the Stephanotis floribunda. Every one is familiar with the uses of the Stephanotis on roofs and rafters. In fact, these are the orthodox places for growing this lovely and valuable plant, and they are, perhaps, the best places for obtaining a full profusion of bloom, for the Stephanotis is greedy of light when growing and ripening its wood, and unless it enjoys a large share of it, the flowers will be comparatively few and far between. In recommending the plant as a wall clother, it must be borne in mind that the walls ought to be pretty fully exposed to the light if a full harvest of blossom is to be reaped. I have known the Stephanotis removed from a roof to a wall, and refusing to flower till it was restored to its light, sunny quarters. So much does this plant enjoy the light, that it does best trained across the roof, cutting the rafters at right angles. Trained up or down the rafters, the shade is too much for the development of its full floriferousness. As a rule, too, the Stephanotis is trained too stiffly on roofs and rafters. A few leaders should be carried along at distances of 1 ft., 2 ft., or more apart, if the space be ample, and from these the flowering shoots should be permitted to depend to any convenient length. This free mode of treatment is the best as regards picturesque effect and profusion of bloom.

The culture of the Stephanotis is very simple. No soil suits it better than equal parts peat and loam with a dash of leaf-mould in it, or well-decomposed manure and a liberal admixture of sharp silver sand. It enjoys a high temperature, from 70° to 80°, when growing and flowering, though it will consent to continue in flower, with little or no injury, for some considerable time in the conservatory at a temperature of from 50° to 55°. It is, however, emphatically a stove plant, a native of Madagascar, and, consequently, delights to revel in a high temperature and an atmosphere bordering on saturation. While in full growth and flower it enjoys shade from direct sunshine several hours on either side of noon. This preserves the full verdure of the leaves, which are apt to assume a somewhat discoloured hue either in an arid atmosphere or a low temperature. This verdure of leaf is a chief element in the perfect beauty of the Stephanotis. The drainage should be liberal, as the plant is greedy of water, and also specially sensitive of stagnant water at the roots. Provided the drainage be sufficient, it can hardly be overwatered, but should a block occur in the drainage, or the latter prove insufficient, the plants can hardly be preserved in health. The Stephanotis continues long in flower, say from April to June or July, according to its mode of treatment. After flowering it enjoys a rest for several months, and by having several plants, and varying the growing and resting seasons, it is possible to have their lovely flowers throughout the greater part of the year. After flowering and the ripening of the young wood is the proper season for pruning. The Stephanotis is one of those plants that bears the knife well, to use a cultivator's phrase, and the modes of pruning adopted are very varied. Some lay in a few leading shoots every year, and cut out the old and exhausted ones; others prune in the leading shoots almost as severely as Grape Vines are spurred, and of course there are infinite gradations of practice between these two extremes. The plant thrives and flowers well under almost any system of pruning and training. One point must, however, never be lost sight of, and that is that the main object of one or both of these processes is to get rid of all weakly or diseased shoots or leaves. The main purposes of skilful pruning are concentration of strength, improvement of form, establishment of health, and production of flowers. In the case of this plant, too, it becomes an indispensable aid to cleanliness; for with all the merits of the Stephanotis it must not be concealed that it has one great drawback. The juices of the plant seem as sweet to insects as its flowers are to us. Hence thrips, scale, mealy bug—especially the latter—fasten upon and often disfigure it. As to the two first, skilful cultivation and proper care should render them impossible. Should they appear, however, Tobacco smoke and the scrubbing-brush will speedily make an end of them. But mealy bug is a different matter. The more congenial the cultural conditions and the greater the skill, it often happens the faster the mealy bugs increase, multiply, and grow. The only efficient remedy for these is cold water dashed on them with such force as to disturb and disarrange their mealy coats. They cannot thrive or live long with these filamentaceous appendages tattered and torn. Repeated streams of water from the syringe or garden engine succeed in washing off or displacing their mealy coats, and thus aid in removing or destroying the mealy bug. Fortunately, too, the plants and even the flowers enjoy these deluging shower baths. The flowers are of such substance as not to be injured by them, and the leaves look fresher after a washing with cold water. During the free growth of the plants they enjoy a weekly watering at the roots with clear manure water. House or stable sewage, if not too strong, weak guano water, or Standen's manure suits them well. From these details of cultivation it is refreshing to turn to the usefulness of Stephanotis flowers. They seem to be formed by Nature for the manufacture of bridal wreaths—so spotlessly white, and so admirably shaped, and so inimitably sweet. For bouquets they are equally useful mounted in bunches or in smaller numbers, say fives or threes, with settings of small Rose or Myrtle leaves, Lycopodiums or Ferns. They are the flowers that please the bouquetist. The Stephanotis is not only superbly beautiful in itself, but it associates well with all other flowers, such as Pancratiums, Eucharis, Roses, Camellias, Lily of the Valley, Deutzias, Spiræas, Heaths, Primulas, Azaleas, Begonias, Heliotropes, Forget-me-nots, Violets, Lilacs, Quisqualis, &c. And then for small baskets, vases, dwarf table decorations, what more beautiful than Stephanotis floribunda, either alone or in conjunction with Myosotis dissitiflora, Quisqualis indica (this must be seen to be appreciated), bright-coloured Begonias, and the different shades of Pelargoniums, ranging from the brightest scarlets to the softest pinks or magentas? D. T. Fish.

CULTURE OF MASDEVALLIAS.

Mr. Burbidge, in an article on the culture of Masdevallias, published in The Garden for September 2, 1876, suggests as the best compost for growing these plants a mixture of "fresh fibrous peat with a small addition of dried horse manure, turfy loam, and a fair proportion of coarse river sand." The article, accompanying the finely coloured plate of Masdevallias presented with your number for February 2, 1878, recommends, on the contrary, the old compost of "rough peat and living Sphagnum, with a small portion of sharp sand." Would Mr. Anderson be kind enough to decide the question, for the benefit of all your readers, by giving us the exact composition of soil which he thinks the best for Masdevallias? The article which he has published in The Garden for May, 1875, gives only general hints on that point, and does not enter into any details. At the same time Mr. Anderson would perhaps tell us also which liquid manure he finds the best for Masdevallias? in what proportion the solid manure ought to be mixed with water? how many times a week it ought to be applied, and at what season? I have begun only last summer to give liquid manure to my Orchids. I have used fresh horse manure thrown into an open cement tank. My Masdevallias especially seem to have benefited very much by it. One very pale variety of M. ignea has given six flowers of the most intense fiery red deeper than in the best varieties I have seen, and a small plant of M. Chimæra has got eight flowers hanging from the sides and bottom of the basket. Only the Sphagnum which, before the use of manure water was beautifully green and growing freely, has become entirely rotten. Is basket culture advisable for the generality of Masdevallias? Chimæra does so extremely well under that treatment, that I should feel inclined to extend it to the other types. Istambol.

[In reply to the above queries, I have to state that Masdevallias, according to my experience, undoubtedly thrive best in Sphagnum and peat, fibry peat with a proportion of fully one-half of Sphagnum, and dried horse manure rubbed through the fingers among the compost. A little gritty sand, something like the quantity you would use of salt to preserve meat, is quite enough, because of its comminuting tendency. Too much sand for Orchid culture is bad—very bad—mainly on account of this. If the Masdevallias be in first-rate health, and the pots getting well filled with roots, then manure water, chiefly from horse manure will be powerful for good. It may be used once a week during summer of about the strength, well, I would rather say the colour, of pale ale. Used in this way, under the influence of a cool climate, the leaves will grow as green as Grass. Many people aver that it is impossible to have Masdevallias without the sooty-looking patches on the back of the leaves. I am of a different opinion, but it requires careful cultivation. Compost nor feeding will not do it of themselves, but, taken together with an imitation of an Alpine climate during spring and summer, and not allowing the mass of growths to get huddled together without judicious separation, and a setting away again of each clump on its own account, will together work to bring about a first-rate state of health—a state, by the way, permit me to say, which is seldom if ever seen. Moreover, to have flowers full sized, finely coloured, and splendidly developed in every way, the plants must be kept near the glass, and the pots ought to be full of roots. This encourages and evolves short peduncles, and stout, broad, well-conditioned flowers. In winter no stimulant should be given; water, which before could scarcely be too copiously administered either at the root or in the atmosphere, must be considerably withheld. A little artificial heat is requisite, but each one ought to be careful that firing is not overdone. Masdevallias are perpetual growers, and the young growths under hap-hazard winter treatment will die back, and possibly carry some of the maturer growths with them. This is the rock ahead which every cultivator ought to guard against. It matters little whether any or all of them be grown in pots or baskets, provided the course of treatment touched upon be followed up. Most of the Masdevallias are beautiful, particularly Harryana, ignea, Veitchiana, and Lindeni. M. Chimæra belongs to what we may call the grotesque section, and is particularly interesting; but give me a well-cultivated plant of any of the showy species above named, particularly the bull's blood variety of Harryana, the variety named splendens, and the one named sanguinea, and I will venture to challenge the whole race for a strikingly beautiful effect.—James Anderson, *Meadowbank, Uddingston, N.B.*]



Microlepia hirta cristata.

Microlepia hirta cristata.—This fine crested Fern has been introduced by Mr. Williams, of Holloway, from the South Sea Islands, and will be welcomed on account of its graceful character and free habit of growth. The fronds droop in a charming manner, and well-grown plants form effective objects for basket as well as pot culture, or they may be planted out with advantage in a warm conservatory. The fronds grow to a length of from 2 ft. to 4 ft. The peculiarity of the present very ornamental variety is that the apices of the frond and of the pinnæ are crested in the same manner as many of our British Ferns. Being a free-growing plant, it cannot fail to be useful for many decorative purposes.

Pelargonium Corsair.—We find this to be the best for winter blooming. We grow all the best varieties in cultivation, but none of them are equal to Corsair for late autumn and winter flowering. In pots from 3 in. to 6 in. in diameter it flowers most freely, the blooms opening well and lasting for a long time in good condition in a greenhouse temperature. Their colour is bright orange-scarlet, and for mixing with white Primulas, Hyacinths, &c., nothing surpasses them. When in small pots the plants should have liquid manure at every alternate watering.—Cambrian.

Ivy Growing in Houses.—It is interesting to note, both at home and abroad, how freely green Ivy grows in passages or rooms, sometimes with very little light. Has this tendency of such an admired plant been taken sufficient advantage of? On the contrary, the plant is very seldom seen indoors. However, a plant so beautiful in form of foliage and in its growth is capable of being used with charming effect in various positions in the house; and we have so many different varieties of green Ivy, that some pretty effects might be produced by means of them. The growth is, if anything, more graceful indoors, from being usually somewhat attenuated for want of light. As to growth, it is very easy in pots, or boxes, or vases. Small sprays may even be grown in water, and in many cases shoots might be introduced from the plants growing on the outside of the house.—V.

Long Roots of Tropical Arums.—Some of the tropical species of Arum send down long roots towards the ground from a surprising height, and the peculiarity might be taken advantage of from an ornamental point of view. Some specimens of the curious Arum with the perforated leaves, commonly known as Monstera deliciosa, are placed near the top of a very high house in the Botanic Garden at Munich with a view to the embellishment of certain pillars.

They are planted in baskets and in pots, and while growing round their pillars fairly well they send perfectly straight, even rootlets about as thick as a common wooden pencil down from a height of from 20 ft. to 30 ft. They would probably grow much longer if they could, as when cut off near the ground they sprout vigorously and begin to descend again. They are elegant as well as curious, as they fall like slender ropes among the tropical foliage.

ANSWERS TO CORRESPONDENTS.

When may Roses Raised from Cuttings be Transplanted?—In October, last year, I put a quantity of Rose cuttings (Hybrid Perpetuals) in a box in a cold frame, and about 60 per cent lived. These I planted out in April 1 ft. apart each way, and they are now good, bushy plants, but they are not where I intend them to remain permanently. Would it be better to plant them out next month, or let them remain where they are until spring, and then remove them?—Q. J. [Let your Roses remain where they are till April. Lift them carefully at the beginning of that month, and replant them in some richly-prepared soil. If you can mulch them with some good manure, all the better; pig manure is, perhaps, the best, but, failing that, give them water occasionally if the summer be a dry one, and the plants should yield some good blooms. —A. W. P.]

Ranunculus anemonoides.—This is said to be a very beautiful and distinct species. Do any of your readers grow it, and will they kindly tell me what it is like, and what treatment it requires, *i.e.*, whether most likely to be at home as a rock garden or border plant?—J. H. [Your correspondent doubtless refers to Thalictrum anemonoides, alias Anemone thalictroides, a beautiful little, dwarf, miniature plant, with single or double, pure white flowers. It most resembles Thalictrum tuberosum. It does well both on the rockwork and in the open border, where it is quite at home, but is a capricious plant as to soil. It is impatient of extreme moisture and drought, and, as far as my experience goes, does not like chalk.—H. Harpur Crewe.]

Winter-blooming Greenhouse Climbers.—I can strongly recommend to "J. W." (p. 319) Tacsonia exoniensis. In a temperature of 45° it went on flowering profusely all last winter and spring, the flowers being larger and of a brighter pink than those produced during the summer. It is also an admirable plant for cutting, the flowers lasting long in vases, either on the bunch or detached from it, with the stems inserted in water. Another plant of quite a different character also flowers freely in water, viz., the Solanum jasminioides, the delicate bunches of whitish flowers of which are also useful for cutting for bouquet or vase work. Heliotropes of different sorts will flower freely in a temperature of 50°, and are valuable for cutting.—D. T. F.

Wintering Young Nut Trees.—Last spring I planted some Wood-nuts, which have grown up about 18 in. How ought I to treat them in winter? Ought I to take them under cover, or leave them out-of-doors?—E. W. Simpson. [Leave them out-of-doors; they are perfectly hardy.]

Preserving Filberts.—Allow me to inform "Z. P. A." (p. 319) that I keep Filberts good not only till Christmas, but also until new ones come in, as follows: They are gathered when quite dry, put into Cucumber glasses, and stored in a dry, cold room. I do not hold with putting them in salt. If they are gathered dry and put into boxes, say 1 ft. in depth, they will keep far better than if they are salted. I have stored them in this way for years with the best results. The secret is to keep them both dry and cold.

Grapes in a Warm Greenhouse.—Will the following ripen their fruit in a warm greenhouse, viz., Bowood Muscat, Kempsey Alicante, Madresfield Court, White Tokay, and Lady Downes Seedling? The house is at present planted with Black Hamburgh and Buckland Sweetwater. Would it be best to keep to these two sorts? or can I have any of the others for the sake of variety.—T. B. [If you want variety, all the kinds you name would succeed, with the exception of Muscats, which require more heat to enable them to set properly than any other kinds.—S.]

Vines in Pots.—What Vines do you recommend for early forcing in pots to start, say in November? The house is a lean-to, facing due south, and we can command plenty of heat. I have room for about twenty Vines, and should like a mixed collection (say not more than three whites), including a few Muscats; but if a mixed collection will not do, would it be advisable to force nothing but Muscats—say half Alexandrias and half Mrs. Pince?—G. E. L. [Of Black Grapes, take Black Hamburgh, Mill Hill Hamburgh, Madresfield Court, and Black Fontignan; and of White, Buckland Sweetwater, White Fontignan, and Golden Queen. You may try Muscat of Alexandria, but it requires a good deal of heat. Golden Champion does well in pots.—S.]

Celery Running to Seed.—What is the cause of Celery running to seed? Is it in some cases inevitable? or is it a consequence of neglect? —D. M. [Celery frequently runs to seed or "bolts," as it is termed, on account of the plants having been subjected to sudden checks, or through being planted in poor soil or allowed to become dry at the roots. From the time Celery plants are up in the seed pan to the time when they are finally planted out into the trenches they should be kept continually growing, and, in order to make provision for this, the seed should never be sown too early; in fact, the trenches should always be prepared when the seed is sown in order to be ready to receive the plants immediately they are fit for planting. Sow the seed in rich soil in pans, boxes, or in a frame. When the plants are up prick them off 2 in. or 3 in. apart, harden them, and when again becoming overcrowded plant them from 4 in. to 6 in. apart, in a bed of rotten manure or good leaf-mould, placed on a hard bottom and firmly trodden. The bed of manure need not be more than 3 in. deep, covering it with 1 in. of fine soil. Keep the plants well watered, and when ready to plant out run a spade or turfing iron between the rows of plants each way; thus treated, they can be readily removed to the trenches without their receiving any serious check. In dry weather water must be applied regularly, unless the soil be very deep and highly manured. A mulching of half-decayed manure or leaves placed round the plants during the summer months will prevent evaporation, and thus keep the roots moist and the plants continually growing.—S.]

Worm-eaten Celery.—My Celery this year is very much worm-eaten. If I put lime on the bed in the spring when I manure, will that prevent a repetition of the evil next year? if so, how much lime must I use?—Fern. [Add to the manure some lime previously to applying it to the ground, a liberal quantity of soot, salt, and lime, and turn it over several times before it is used. If you add a good dressing of lime to the ground and leave it in a rough state until wanted in spring, that will also to a great extent counteract the evil of which you complain. —C.]

Shedding of Fruit in the Red-berried Elder.—In The Garden last week (p. 323) allusion is made to this shrub, of which we had half a-dozen small plants sent to us direct from Germany nearly two years ago, and as they looked more dead than alive when they reached us I put them into small pots. I planted them out in spring in good soil, and the following summer (that of 1877) they made good growth, and last spring they flowered and set a great quantity of berries, which unfortunately all dropped soon afterwards. This season they have grown very strongly, throwing up stout succulent shoots. One of these I measured to-day, and found it to be upwards of 10 ft. in height and 7 in. round the base level with the ground. We have also an old plant here of this Elder which flowers and sets berries every spring in profusion, but they always drop in an immature state. Do other growers find this to be the case? and is there any method of inducing this Elder to perfect its fruit?—S. K.

Late Flowering of Tritonia aurea.—Can anyone tell me why Tritonia aurea here (Doncaster) does not show flower buds till Oct.? They are poor, dwindling attempts at flowers and hardly colour or come to maturity, while those in the neighbourhood were in full beauty in Sept. Can any treatment be recommended to cause the flowers to push earlier? —C. W. S. [Your plants probably suffer from want of food. After they have ceased blooming and their tops have died down, lift the bulbs and store them in a dry shed till spring; then choose a warm border of deep soil, well enrich it with rotten manure, and, if the soil be stiff, add a liberal supply of road sand; in this plant the bulbs, and next year the result will probably be more satisfactory. Tritonia aurea is not thoroughly hardy in all parts of England, and in your case may require a little warmer situation than that in which it now is.—C.]

Spruce and Scotch Firs.—What is the best month in which to plant these Conifers?—P. S. [The proper season for transplanting the Spruce and Scotch Firs depends much upon the nature of the land; but in moderately dry and warm soils I should recommend moving them from the middle to the latter part of September, and if the permanent site is not ready, putting them in by the heels in a dry, warm border for a few weeks. The Spruce may afterwards be planted out in October in any fairly-sheltered spot with a cool-bottomed soil, and the Scotch Fir upon a high and dry sandy or gravelly loam, or upon Moss land which has been well drained. Autumn planting is decidedly best for large plants of either kind, as they get a firmer hold of the land, and are not so liable to injury from rocking by wind in the spring. Where small seedlings are planted out in their permanent situations, spring is probably the best time, as these are very liable to injury from sharp frosts. Such may be successfully removed up to the middle of May.—A. J. B.]

Names of Fruits.—*Coldstream.*—Insufficiently stamped to the amount of 2s. 2d., therefore refused. *H.*—Hollandbury. *F. D. B.*—1, Hawthornden; 2, Old Nonpareil; 4, Rhymer; 7, King of the Pippins; others not recognisable.

Names of Plants.—*Correspondents wishing plants to be named will oblige by complying with the following rules: To send the specimens as complete as possible,* i.e., *both stem, leaves, and flowers, and fruit, when possible. To carefully pack them in gutta-percha tissue, or other impervious material which will prevent evaporation. Not to send varieties of popular flowers, such as Fuchsias or Pansies, which are best named by experienced growers of such plants, who have the means of comparison at hand. Not to send more than four plants or flowers at a time. Always to send, in addition to whatever pseudonyms or initials they may desire to use in the paper, their full name and address. To pre-pay all packages containing plants or flowers.*——*T. W.*—For Veronica læta (p. 234) read V. lactea, which is synonymous with V. repens. *X. C.*—13, Thujopsis dolabrata; 14, Pinus austriaca; 15, Rhus glabra; 16, Juniperus chinensis (male). *Anon.*—The large leaf and flower belongs to an Indian Acanthad, Adhatoda vasica; the smaller pieces are so very insufficient that it is impossible to say with certainty whether the plant from which they were taken is Abelia rupestris or Abelia serrata. *S. F.* —Funkia grandiflora; Pteris umbrosa. *T.*—The name of the fungus is Helvella crispa, one of the edible species. *R. G.*—Certainly a Pentstemon, but from a single bloom it is difficult to say what variety.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

October 15.

Seldom has such a fine display of flowers, fruits, and vegetables been seen at South Kensington at this period of the year as was furnished on this occasion. The principal nurserymen contributed groups of new and rare plants, and there were fine collections of hardy fruits and Grapes. A pot Vine grown for the decoration of the dinner-table by Mr. Sage, Ashridge Park, Berkhampstead, attracted much attention. It was trained on an umbrella-shaped trellis, and bore eleven good bunches of well-coloured Grapes. The pot in which it was growing was a 9-in. one, but the roots had been supplied with food from larger pots below, or from being allowed to enter the border, but the soil and roots contained in the pot were sufficient to keep the plant perfect for several weeks after the fruit was ripe.

First-class Certificates.—These were awarded to—

Pernettya mucronata lilacina (A. T. Davis).—A free-growing kind of bushy habit, bearing a profusion of handsome, pink-coloured, glossy berries.

Bomarea Carderi (Bull.)—A free-growing plant, well adapted for training along the rafters of the greenhouse, and bearing a profusion of bell-shaped, rosy-pink, green-tipped blossoms. Mr. Green, gardener to Sir G. Macleay, was awarded a cultural commendation for a cut branch of the same plant, furnished with a large truss of drooping blossoms.

Anthurium Scherzerianum album (Veitch).—A white-flowered variety of this well-known plant, and one likely to be grown as a companion to it.

Lastrea aristata variegata (Veitch and Bull).—A fine greenhouse Fern having glossy green pinnæ, the midrib being of a greenish-yellow; well worth growing in pots or vases.

Aspidium crinitum (Bull).—A stately Fern of erect habit, and having brown, woolly fronds, and finely-cut, handsome pinnæ.

Mammillaria sphacelata (Boller).—An interesting species of low growth, and very ornamental.

Botanical Certificates were awarded to Phalænopsis violacea (Veitch), and Masdevallia velifera (Bull).

Groups of Plants.—Messrs. Veitch & Sons, Chelsea, contributed a neat little group of Orchids, Ferns, &c., amongst which were the white-flowered Anthurium just alluded to, the rare Phalænopsis violacea, Dendrobium bigibbum superbum, and a fine panful of Begonia Queen of the Whites. Mr. Heims, gardener to F. A. Philbrick, Esq., St. John's Wood, exhibited a very pretty Odontoglossum of the Andersonianum type named O. Philbricki. Mr. C. Green, gardener to Sir G. Macleay, showed cut flowers of the fine blue-flowered Dichorisandra thyrsiflora and a plant of Dendrobium album, well flowered, which had been grown in quite a cool house. Mr. William Bull furnished a group of new and rare plants remarkable for variety both of flower and foliage; among them may be mentioned finely flowered examples of Dendrobium bigibbum, Oncidium varicosum, the chocolate-flowered O. Forbesi, and Odontoglossum vexillarium roseum. Intermixed with these with good effect were well-grown plants of Phyllanthus nivosus, Dracæna Goldieana, Croton triumphans, Bomarea Carderi, Sarracenias, Lilium neilgherrense, the white and rose-flowered Lapagerias, and the beautiful violet-scented Oncidium tigrinum. For these a gold medal was awarded. Mr. B. S. Williams, of Holloway, was awarded a large gold Banksian medal for a collection of choice Orchids and stove plants. Noticeable in this group were fine pansful of Indian Crocuses (Pleione lagenaria), several well-flowered, healthy plants of the beautiful white-flowered Dendrobium formosum giganteum, Oncidiums, and Lady's-slippers. With these were also associated fine-leaved Palms, Ferns, and Crotons, including the graceful new Croton Prince of Wales and several fine-leaved Coleuses.

Mr. Parker, of Tooting, showed a fine collection of cut flowers of hardy plants; amongst them were numerous kinds of Michaelmas Daisies and Phloxes, Tritoma grandis, a fine autumn plant, large and well developed flowers of Stokesia cyanea, so much prized in the flower markets at this season of the year, various Pompone Chrysanthemums and Dahlias, China blush Roses, Rudbeckia Neumanni and R. purpurea. This collection also contained fine blooms of the beautiful yellow Coreopsis lanceolata, Fuchsia Riccartoni, the curious-flowered Cynara Cardunculus, Helianthus multiflorus major, Neja gracilis, Colchicums, and good spikes of Schizostylis coccinea; also Verbena venosa and Erigeron speciosus superbus, together with good spikes of Liatris pyrenostachys, two varieties of Gynerium argenteum, and the tall-growing Helianthus orgyalis.

Mr. Thos. Moore sent from the Botanic Gardens, Chelsea, single Dahlias, a collection of which also came from Mr. Cannell, among which were fine blooms of D. Paragon, lutea, Cervantesi, and coccinea. The latter exhibitor also showed a bright-leaved Iresine, named Cannell's Brilliant, early-flowering Chrysanthemums, and Violets. Messrs. Hooper & Co., Covent Garden, sent from their Twickenham nurseries well-grown plants of Gesneras with rich and varied foliage and yellow, rose, magenta, scarlet, orange, and other coloured flowers. Messrs. Osborn & Sons, Fulham, contributed plants of Skimmia japonica, finely berried, Yucca quadricolor, Palms, Dracænas, Phormium tenax variegatum, and Eurya latifolia. Mr. W. Smith, gardener to C. Lane, Esq., Henley-on-Thames, showed a fine plant of Vanda cœrulea bearing five spikes and eighty-four fully-developed blossoms. Messrs. Paul & Sons, Waltham, exhibited numerous stands of cut Roses, including a fine boxful of the white blooms of Niphetos and other good autumn-blooming kinds. Messrs. Laing & Co., Forest Hill, sent a collection of Begonias, representing not only the best kinds in cultivation, but also illustrating how showy such plants are late in autumn when flowers are comparatively scarce.

Messrs. W. Paul & Sons, Waltham Cross, sent a collection of sprays of ornamental deciduous trees remarkable for bright leaf coloration; amongst them were the following kinds, viz., Cornus Mas variegata and alba, Ulmus aurea and others, Acer Negundo variegatum, Pyrus arbutifolia, Quercus concordia, Q. coccinea, and Q. Cerris, Euonymus atro-purpureus, Weigela rosea variegata, Liquidambar styraciflua, Cerasus Mahaleb, Hippophæ rhamnoides, Spiræa prunifolia fl.-pl., Fraxinus excelsa aurea pendula, Castanea dissecta, Rhus Cotinus and typhina, Philadelphus coronarius, Betula purpurea, Catalpa syringæfolia aurea, Legustrum ovalifolium, Sambuscus nigra argentea, various dwarf Junipers and Retinosporas, Taxus baccata aurea and elegantissima, Biota orientalis aurea and semperaurescens, Thujopsis dolabrata, Yucca recurva, Thuja Lobbi, Bambusa aurea and Metake.

A large gold medal was awarded to Messrs. Veitch & Sons, who exhibited in baskets a collection of miniature plants suitable for winter outdoor decoration. Among them were the following: Various Aucubas, Andromeda floribunda and Catesbæi, Aralia Sieboldi, Azalea amœna, Azara microphylla, different kinds of Buxus, Cotoneaster microphylla, Daphne Cneorum major, Elæagnus pungens variegata and japonica maculata, various kinds of Euonymus, Eurya latifolia variegata, four sorts of Erica, Menziesia polifolia atropurpurea and polifolia erecta alba, Osmanthus ilicifolius and others, Ligustrum coriaceum, various Mahonias, Gold and Silver Hollies, Kalmia latifolia, Rhododendrons, Skimmia japonica, S. fragrans, and S. oblata, Sedum thymifolium, Laurustinus, Veronica Traversi and angustifolia, Vinca elegantissima, Ilex crenata, Gaultheria Shallon, Vaccinium Vitis Idæa, Berberis Hookeri, Hedera arborea elegantissima, Hypericum calycinum, four hardy Heaths, Diplopappus chrysophyllus, Daphne elegantissima, Abies pumila, different kinds of Cupressus, and Cryptomeria elegans. From the Society's Gardens came plants of double zonal Pelargoniums, Michaelmas Daisies, Begonias, and Improved Mignonette. Mr. F. T. Davis, Ogle's Grove Nursery, Hillsborough, showed plants of Pernettyas lifted from the open border and loaded with berries. Messrs. Maule & Son, of Bristol, contributed fruit of Pyrus Maulei, figured in The Garden (Vol. XIII., p. 390); also jam made from the fruit this season, which was pronounced to be good. Mr. Dean showed bright-looking blooms of yellow and scarlet Tropæolums, consisting of kinds valuable for culture in the greenhouse for winter blooming; also African Marigolds and some hardy, green, carpet-bedding plants.

In competition for Messrs. Pearson's prizes for Grapes Golden Queen and Mrs. Pearson the exhibits were neither so numerous nor good as might have been expected, but, nevertheless, several good bunches were shown. The prize takers for Golden Queen were, first, Mr. J. Atkins, gardener to Colonel Loyd-Lindsay; second, Mr. Henderson, gardener to Mr. Deacon, Mabledon Park, Tonbridge; third, Mr. Anderson, Clifton, Notts. For Mrs. Pearson, the prize winners were, first, Mr. Allan, gardener to Lord Suffield, Gunton Park; second, Mr. Taylor, gardener to Mr. McIntosh, Oaklands Park.

Fruit and Vegetables.—Messrs. Lane & Son, Great Berkhampstead, sent a collection of Grapes, large in bunch and berries, and finely-coloured. They consisted of Black Prince, Black Hamburgh, Muscat Hamburgh, Barbarossa, Alicante, Gros Colman, Muscat of Alexandria, Golden Queen, Trebbiano, Lady Downes, Dr. Hogg, and Madresfield Court. The same exhibitors also sent several dishes of Apples and Pears. Mr. G. F. Wilson, Weybridge, furnished ripe fruit of Doyenné du Comice Pear plucked from a pot tree in his orchard house. Mr. Goodacre, The Gardens, Elvaston Castle, exhibited fine bunches of Lady Downes Grape, and Mr. Harrison Weir sent good examples of Muscat Champion grown in a cold Vinery. Mr. Miles, The Gardens, Wycombe Abbey, showed a new Pine-apple named Lord Carington, which was considered to be one of the best keeping Pines. It was awarded a silver medal. Mr. Maulden, gardener to J. S. Budgett, Ealing Park, sent two smooth-leaved Cayenne Pines of great weight and good quality. Excellent collections of Apples came from Messrs. Paul & Son, Cheshunt; Messrs. Veitch & Son, Chelsea; Messrs. W. Paul & Son, Waltham, who also sent fruit of Raspberry Belle de Fontenay, an October-fruiting yellow kind in good condition; and 100 varieties of Pears were sent from the Society's Gardens at Chiswick. Mr. R. Dean showed an extensive collection of Potatoes.

Pelargoniums from Root Cuttings not True to Name.—Some twenty years ago I sent to a contemporary two small plants of Pelargoniums raised from root cuttings, with the pieces of root attached; also a note describing the way in which they were propagated. In about a fortnight afterwards I was not a little surprised to see figures of my plants, and also the note in print. Since that time I have propagated many thousands in the same way. Plants having perfect flowers come true to name, but sports or semi-double varieties, such as Prince of Pelargoniums, La Ville de Caen, Queen Victoria, &c., never come true from root cuttings. It would be interesting to know if the plants that produce those semi-double varieties are still in existence; and if so, to compare them with plants propagated from roots, which no doubt would prove to be identical.—W. Williams, *Ryde, Isle of Wight.*

No. 362.] SATURDAY, OCTOBER 26, 1878. [Vol. XIV.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

SCHÖNBRUNN.

Versailles has much to answer for besides the more hideous parts of the grounds of the Crystal Palace. This is one of its children, so to say. As at Versailles, the gardens here are behind or spread out from a palace. Passing through the centre of this, the "glories" of this famous garden burst upon one like a scene in a theatre, with which all such gardens have a good deal more to do than with pure gardening. The chief elements are gravel, clipped trees, and a hill beyond with a colonnade on its top. And such enormous alleys and such Brobdingnagian hedges! As at least one catalogue describes a little Alpine plant as a "tremendous" bloomer, an equally strong term may be applied to the effects here. There is gravel enough on which to mass the whole Austrian army! Versailles is nothing to it as regards Saharas of gravel! Imagine a walk over 60 ft. wide and a mile long. In the vasty distance a black object, which on closer inspection proves to be a human being, may be seen now and then crawling across the waste. Everywhere one looks stretch enormous walks. Only in the middle vista is there a bit of Grass, and beyond on the hill which rises up and relieves the scene somewhat like the background at Caserta. It would take more than a day to traverse all the walks, made, of course, in most cases without the slightest need, except to carry out in its purity the "style." But more imposing than the walks are the "hedges." Every walk is bordered with these rising to the height of a large two-storied house. The walk running along the front of the palace and to the right and left may be compared to Gower Street with a rusty clipped hedge instead of (and as high as) the houses on each side. The trees, although clipped, have, from being allowed to grow so high, all formed large trunks, mutilated and guillotined at the top when they arrived at the desired altitude. As they are all clipped alike, of course nobody can see any beauty or individuality in them. Perhaps it was rather to use trees as a background for their statues that the old designers so arranged the trees. In any case the statues are here—many of them fitted into clipped niches in the green and rusty walls (the trees give in very sadly to the clipping). How easy it would be to give some more useful employment to the persons guilty of bringing so much rubbishing "art" into the world as we see displayed in so many Continental gardens. Public gardens will not always, it is to be hoped, be a posing ground for the costly failures of the studio. Was it really such a misfortune that the image-breakers once had their way in Europe? Certainly they would do no harm in smashing up multitudes of the statues that now disfigure gardens, and no one need fear their destroying in them anything so valuable as the Psyche of Capua. The statues seem all "dots" of equal value a little way off; the giant hedges everywhere prevent one seeing what is behind them—the whole forming a scene of hedges, alleys, and roads, with here and there the never-failing water-jet, the sham ruin, and the cascade. But there was one thing more, a specimen of the scaffolds with which the walls are clipped, a huge machine which might be very useful in erecting one of the noble workhouses which now form the most imposing buildings in the west end of London. The green hill, with the colonnade above, looks refreshing after all this. But on climbing it the same orthodox principles are seen to have been applied in its case; for it, charming hill that it was, is now embellished with two full-sized formal duck-ponds and broad rectangular walks, that are placed exactly in the best manner to spoil the beauty of the Grassy slope. Some may say in answer to this, "Well, I like it as it is; I like it all," meaning every kind of garden. The answer is, that this garden and others like it prevent the seeing it "all." The vast extent and the great cost of such an establishment tend to prevent any due attention being paid to many branches of the art of infinitely greater importance and greater beauty from any point of view. The great public, for whose instruction such gardens should aim, learn that there is perhaps a little more in the world of trees and plants than in a crater; the effect on those who ought to know something of the world referred to is scarcely less evil, for do we not often find them without any apparent idea of the inexhaustible treasures of beauty of the vegetable kingdom, and therefore grovelling in trifling formalities? The things described are ugly in themselves and occupy space that might be devoted to real tree and real flower gardening, and to many pictures composed of these, and a few other elements.

As at Caserta, there is the stately English garden, and at Versailles the well-stored tree garden of the Little Trianon, so at Schönbrunn, in a somewhat obscure corner, there is a botanic garden of considerable interest, and different in some ways from gardens of a similar kind in other parts of Europe. It is instructive in avoiding, almost wholly, the beds and borders with which so many botanic gardens are spoiled. Even among those one likes best, such as the College Gardens at Dublin, there is such a sacrifice of all repose and verdure to rectangular beds, miles of alleys, and walks, all supposed to be necessary for the accommodation of the plants, that it is pleasant to see a botanic garden where there is a little repose, and where the plants are disposed in what may be termed a more natural way. The garden is fairly rich in trees and shrubs, and to these are added from the houses in summer a great number of specimen plants that will only bear the fine season out-of-doors in Vienna. These plants are treated so as to seem part of the open-air collection in summer, so to say. Many of them, stored in large houses with lights only on one side, are so preserved, that they naturally make their growth and flower out-of-doors in summer and autumn. They are placed in the Grass in easy groups, in many cases, so as to associate with the hardy occupants of the ground. In case any of the pots or their surfaces should be too evident, they are frequently surrounded by a few worn "rustic" stones from the mountains. The result is frequently very good, and allows of a great variety of plants to be seen. Among plants yet in flower were some enormous old Coral trees, with gnarled stems 10 ft. high and handsome standard heads. Sometimes one can pass from beneath the shade of a stately group of fine Sophoras and other exotic hardy trees, and pass easily on one side and at its outer edge among specimen shrubs, stove plants, greenhouse plants, and hardy herbaceous plants all growing on the turf. Here all the best features of the so-called "sub-tropical gardening" may be seen—in fact, the best points in the system carried out in this way about London have evidently been long illustrated in German gardens, and from them were adapted. Here in mid-October the garden was alive with colour from hardy deciduous bushes and trees, the most noticeable being Hamamelis virginica, lovely in gold and brown leaves, and with a string of pale flowers along each shoot. This low tree is well worth growing for its fine colour in autumn. The specimen alluded to had room to grow and to receive the sun. An Ash, labelled the "aurea" variety of the common Ash, was a large tree of lemon-yellow foliage. There are many beautiful specimens of the Japan Sophora in this garden with branches touching the Grass, and great boughs ascending and spreading in the most picturesque manner, all the foliage still green and fresh, and it is also rich in American trees. Pæonies, both herbaceous and "tree," are grouped and dotted to a large extent on the Grass; their effect must be very fine, the more so, as the beauty of such "landscape" as was possible in so small a garden has not been destroyed; and it is possible to see their great flowers from distant points as well as close at hand. There are many huge "houses" here. It is a pity that when these have to be spoken of a dampness comes over the spirits. The day will, no doubt, come when most of the houses in such gardens will be placed in a large yard, along with the bears, unless in the meantime the architecture and arrangement should be wholly altered. Here an immense series of tall houses flank the garden on one side, but after so many weary miles on the gravel of the great garden, who could find time in one afternoon to fairly glance at all their weariness in red pots and tubs? Notable among them, however, is an immense collection of the tropical Arums, not all grown in pots, but many of them on the stems of trees placed in the earth-floor of a large house and leant against its high back wall. Many of these dead stems of trees were more than 15 ft. high, and covered from top to bottom each with a species of climbing tropical Arum with large foliage. This is a simple and effective mode of growing such plants that may be carried out profitably by those having large, warm houses.

TREES AND SHRUBS.

TREES AND SHRUBS FOR AUTUMN EFFECT.

In addition to the trees and shrubs mentioned last week (p. 348), there are many others remarkable for the beautiful tints assumed by their foliage during autumn. The following are some of the most striking observed in several places in the neighbourhood of London during the past week. Although the effect created by the decaying leaves of many of our common trees is exceedingly charming, yet the golden-yellow and orange of the Elms, Poplars, and Horse Chestnuts cannot vie with the brilliant hues of the American Liquidambars, many of the American Oaks, and numbers of other exotic trees. For instance, where, even in the flora of all Europe, can a counterpart be found for the Persian Ironwood, Parrottia persica (see The Garden, Oct. 5, p. 320)? The splendid colours of this Eastern tree are indescribably beautiful; deep green, scarlet, crimson, and deep orange-red combine to make a truly magnificent picture. As a wall plant this is much more satisfactory than when grown on the open lawn. The Silver-leaf Maple (Acer dasycarpum), which, on account of its rapid growth and beautiful foliage, is much planted as a shade tree in the United States, is one of the finest of deciduous trees; in early spring it is covered with myriads of reddish flowers; then its handsome leaves, green above, silvery-white below, turn in autumn to a golden yellow. The Red Maple (Acer rubrum), more compact in form and less rapid in growth than the preceding, is also at the present time very ornamental; in spring its deep red blossoms render it even more conspicuous and beautiful than the last-named. The Sugar Maple (Acer saccharinum) is one of the noblest of American trees, and is much valued, both for its wood and for the beauty of its form and foliage; in summer its leaves are a light green, but now a clear yellow. The South European Acer platanoides is also a most desirable deciduous tree, whose Sycamore-like leaves are now aglow with a pure, rich, golden-orange colour. The Tulip tree (Liriodendron Tulipifera) is one of the largest and most beautiful of North American trees; as an ornamental tree it is at any time hardly surpassed, but now that its foliage is suffused with a rich golden glow it is especially striking, a fine specimen making quite a feature in the landscape. Corylus americana, the New World representative of our common Hazel Nut, which it much resembles in leafage and habit, changes from green to rich purplish-red and crimson-scarlet, and is one of the most gaudy of autumnal shrubs. What a splendid effect could be obtained by a judiciously-planted group of this beautiful foreigner! Amelanchier Botryapium, a pretty white-flowering shrub, is now gay with orange-yellow and reddish-brown foliage. The scarlet-fruited Thorn (Cratægus coccinea), apart from its large, handsome fruit, has large leaves, now red and yellow. A variety of the Wild Thorn, of the Eastern United States, has enormous spines and bold foliage, which turns from dark green to a lovely combination of yellow and red. C. pyrifolia is another sort with splendidly-coloured leafage. The Hop Hornbeam or Ironwood (Ostrya virginica) is now clothed with rich brownish-yellow leaves. The Canoe or Paper Birch (Betula papyracea), a large and handsome tree, is in autumn a pyramid of golden-yellow; although it lacks the grace and elegance of some forms of the common Birch, its brilliant white bark—from which, in its native haunts, Indians and traders construct canoes, and which also forms the basis of a great variety of Indian fancy work—renders it very striking. The brilliant autumnal colours of the Sweet Gum (Liquidambar styraciflua) are too beautiful to be passed over without notice; rich orange-scarlet, crimson, and yellow give place in some individuals to a dull purple, the long-stalked, star-like leaves, when well coloured, being especially handsome. The Purple Birch (Betula purpurea) becomes more and more purple as the season advances, although the dark, handsome foliage is sufficiently pronounced in colour, even in early spring. A new deciduous shrub, a variety of the Cornelian Cherry (Cornus Mas), which bears the varietal name of aurea elegantissima, is of rare beauty in the nurseries of Messrs. J. & C. Lee, the golden blotches of summer giving place at the present time to red of several shades. Another shrub in the same nursery, a golden variegated variety of the common Syringa (Philadelphus coronarius), is also worthy of special mention, its still living foliage being of the richest golden colour.

G.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Moving Trees without Balls of Earth.—Some have an idea that a tree cannot be moved successfully without a large ball of earth attached to it, but where there is not machinery sufficient for that purpose, failure in that case is often the result. My system is to begin at some distance from the base of the tree—rather further, in fact, than is usually practised, and to comb the soil away from the roots, injuring them as little as possible. If a tree be gone properly round in this way, and the roots saved, one is often more certain of success than when trees are transplanted with large balls; such, at least, is my experience.—D. S. Gillett, *The Heath, Weybridge.*

The Pyramidal Oak.—This fine tree ought to be well known, and much planted, and yet it is not so. Can anyone say what it is that causes so little attention to be paid in England to any but the commoner kind of deciduous trees? This is an "old" tree, to use a nursery phrase, and yet we do not remember to have seen a really fine specimen of it about London. Yet it is a variety of British Oak with the habit of a Lombardy Poplar. In Vienna, in one afternoon, we met with a dozen good specimens of it, some of them as slender and as graceful, and as erect-growing as the Lombardy Poplar, others somewhat more pyramidal towards the lower part. This variety in form makes the tree all the more valuable for lawn or garden; and, as a tree with character for landscape planting, there exists nothing more valuable.—V.

Rapid Growth of a Pinus insignis.—About fifteen years ago I had a Pinus insignis planted on the lawn in front of my house. The plant was then about 5 ft. high. The situation is a sunny, sheltered one, in the south-east of Ireland, and the soil and climate are good. The plant has become now a tree of 48 ft. high, and measures 70 in. in circumference at 1 ft. from the ground. It is a beautiful object both in summer and winter. Except in the Tropics, I have never seen an instance of such rapid growth. Can any of your correspondents inform me if they have observed a similar case as regards this tree, and if they can tell if this beautiful and fast-growing Conifer is fit for general planting in the open ground; and also if the wood is of a good and useful quality?—P.

Bamboos at Tottenham.—The smaller kinds of Bamboo grow well at Tottenham in partially-sheltered places in deep, moist soil, and they form handsome objects during summer and autumn. In all cases it is best, if possible, to cover their roots with a thick layer of leaves during winter. Isolated specimens in front of shrubberies break up the formal edgings which they often possess, and with good effect. The kinds grown at Tottenham consist of B. Simmonsi, and its variegated variety, flexuosa, guadua, glaucescens, aurea, nigra, mitis, Fortunei, variegata, and the broad-leaved variety known by the name of Metake.

Eucalyptus globulus.—Among the many notices of this Gum tree that have appeared recently I have seen none where the height equals that of a tree in the garden at Glencairn, one of the delightful residences in that lovely place Bournemouth. Though only four years have elapsed since it was taken from the flower-pot in which it was raised, it is now 36 ft. high, its circumference at 3 ft. from the ground being 15½ in. Whether E. globulus will succeed in England the first hard winter may determine. I am trying it in woods that are cut periodically for pit timber and charcoal, with, I confess, little confidence as to the result. There are, however, other species of Eucalyptus which those who have seen them in the colder parts of the south assure me are much more hardy. Could any of your readers inform me which species is the hardiest, and where reliable seed can be obtained?—M. Moggridge, 8, *Bina Gardens, South Kensington, S.W.*

NOTES OF THE WEEK.

Chamærops excelsa in Flower.—It may interest some of your readers who are lovers of this hardy Palm to know that one has blossomed this season on the Cotswold Hills, a locality in which it has been growing for the last five or six years without any protection, and it is now a most beautiful plant.—W. H. G.

The Rose-tinted Pampas Grass.—A group of seven fine plants of this in the Botanic Garden at Schönbrunn has lately looked very attractive from the number, vigour, and grace of the plumes. The plant is of great value for the sake of variety.

Tyerman's Groundsel (Senecio pulcher).—This fine hardy plant has been in bloom in the Tottenham Nurseries for many weeks past, but it has never been more beautiful than at present. Its flowers are even larger than we have ever seen them before, and they are remarkably bright in colour. Should no severe frosts occur, some of the plants will, in all probability, continue to flower until December.

Plumbago Larpentæ.—Though perfectly hardy this plant is well worth growing in pots for the conservatory. It flowers more freely in pots than in the open ground, and dwarf plants of it when in bloom are well adapted for forming an undergrowth for Palms, Ferns, or other tall-growing plants. We lately saw examples of it in 6-in. pots not more than 6 in. or 8 in. high, and full of blossom, the colour of which is unequalled in its way by perhaps any other plant at this time of the year.

The Virginian Creeper.—It is interesting to see the striking use frequently made of this common creeper abroad, in letting it fall in immense sheets over walls, banks, bridges, and the like. On each side of the Palace of Schönbrunn there is a private garden which is completely enclosed on the three outer sides by a high and roomy covered way of iron trellis-work. The whole of this in both gardens is completely sheeted with the Virginian Creeper—immense walls of rich and glowing colours. It was, indeed, the only thing in the great French garden there, or of what was seen from it, that deserved any praise.

Utricularia vulgaris.—This Bladder-wort is well adapted for growing in small aquaria either in the dwelling house or conservatory, or amongst other aquatic plants in greenhouse tanks. We lately saw it growing vigorously in a tank in the large conservatory at Pine-apple Place, where it has flowered freely. It is not often met with under such circumstances, but, being an interesting plant, it might be employed in that way with advantage.

Fortune's Saxifrage (Saxifraga Fortunei).—At this season, when there are but comparatively few hardy plants to attract attention, this Saxifrage is making a fine display, its large panicles of white blossoms rising in profusion from rosettes of dark green, roundish leaves. As it is not particular as to treatment, and, flowering, as it does, at this season, it is a very desirable plant. It is also perfectly amenable to pot culture, making a very attractive greenhouse plant, and for this purpose it should be planted out every alternate year, in order to regain vigorous growth, for if continually confined to a pot it produces but inferior panicles of flowers.—A.

Finely-flowered Dipladenias.—My gardener planted three plants (two of D. Brearleyana and one of D. amabilis, which were bought in 5-in. pots in July, 1877) in a narrow border in a stove in February, 1878, and trained them on wires near the glass. They began to bloom in May, and have ever since been a blaze of brilliant colour. From a calculation my gardener has made, he considers that each plant of Brearleyana has produced sixty-five bunches, and that each bunch averages nineteen flowers. This would give a total of 2470 blooms. The amabilis variety has not bloomed quite so freely. These flowers are most useful for cutting. On one occasion we decorated a mantlepiece with them and Stephanotis in a bed of Moss, the effect of which was very good. These lovely Dipladenias are, I think, well worthy of more extensive cultivation.—R. Kelly, *Kelly, Lifton, Devonshire.*

Plants in Flower at Tottenham.—Schizostylis coccinea is now finely in flower at Mr. Ware's nursery. Its spikes are large and well furnished with bright fully-developed blossoms. Stokesia cyanea is better this season than usual, and Sternbergia lutea is also very showy, as are also Linum luteum, several fine varieties of Poppy, and Monkshood. The Willow-leaved Veronica (V. salicifolia) is finely in flower in the shape of large spreading plants on rockwork, and the pretty Amaryllis crispa is flowering freely in the open air. The Colchicums are also well in flower, as are likewise Lobelia fulgens, Senecio pulcher, and specimen plants of Yucca gloriosa, the latter bearing noble spikes of bloom buds, which ought to be managed in such a way as to have them open at Christmas. Early-flowering Chrysanthemums are still very showy, the best kinds now in bloom being Adrastus, bright magenta; Chromatella, golden-yellow; Precocité, sulphur; and a very small golden-yellow-flowered kind named Button, which is valuable for supplying cut bloom. Viola stricta alba forms a striking contrast to crimson, blue, and yellow Violas, with which it is associated.

A Good Double Violet.—Viola Blandyana is the name given to a dark rich purple, double-flowered Violet growing in Messrs. Hooper & Co.'s nursery, Twickenham. The flowers are not large, but very pretty and deliciously fragrant, and they are produced plentifully at nearly all seasons of the year.

The Species of Fuchsia in the Flower Garden.—The species of Fuchsia with the ampler foliage and the larger flowers would seem to be very well adapted for flower gardening. At Schönbrunn they are used in this way and look well, the foliage being fresh and abundant and some flowers yet to be seen.

Plumbago capensis Out-of-doors.—I doubt if this Plumbago could be grown successfully as a pyramid or pillar plant in this country as it is at Vienna (p. 345) without taking it up for wintering; but for wall decoration I think it would form a valuable plant. The only season during which it would probably need protection is the spring, when late frosts might injure the young shoots. In well-drained and warm positions I feel sure that this Plumbago could be grown admirably.—W.

The Willow-leaved Speedwell (Veronica salicifolia).—In addition to this being one of the best of Speedwells for the adornment of the rock garden or shrubbery border in autumn, it also makes an excellent pot plant. Cuttings of it strike readily in spring or summer, and if grown on, and the shoots stopped once or twice, compact, bushy plants, well-furnished with whitish-coloured flowers, may be obtained during the winter months. We lately saw sturdy little plants of it in Covent Garden Market.

Poinciana pulcherrima.—This old-fashioned plant is now seldom seen out of botanic gardens, but it is one well worth growing for covering a wall in stoves or warm greenhouses. Its leaves are as handsome as those of Reidia glaucescens, to which they are somewhat similar. Its flowers, which are borne in terminal clusters, are of bright orange and scarlet, and very showy. We lately saw plants of it flowering in the Pine-apple Nursery.

Crotons at Holloway.—At no season of the year are Crotons more valuable than in autumn, when they have finished their growth and the leaves have assumed their rich and varied colours. Flowers, too, are then scarce, and fine foliage affords some compensation for their loss. Crotons now form one of the best features in Mr. Williams' nursery, Holloway. They range from small bushy plants suspended in pans, so as to bring them close to the glass, in order to improve their colour, to massive specimens of large size. The new Prince of Wales is a fine addition to this family of plants, as is also C. Williamsi, a kind just now being distributed. It is robust in habit, having leaves almost as large as those of Magnolia grandiflora; they are of a shining bronzy-green, with rich rosy-crimson markings; and, in the case of large specimens, they retain their colour down even to the base of the plant, a circumstance unusual with Crotons.

Polyanthuses and Pansies.—Owing to the mildness of the season, both Polyanthuses and Pansies seem to be blooming in unusual profusion. Of the former, some good examples have been sent to us by Mr. Caudwell, of Wantage, and of Pansies quite a large boxful of new and beautiful kinds has come from Mr. H. Hooper, of Widcombe Hill, Bath. Mr. Dean, of Bedfont, has also sent us blooms of a fine dark blue Pansy, with a small yellow eye, called Blue Beard, stated to be an excellent sort for bedding purposes.

Pears at South Kensington.—The collection of forty dishes of Pears exhibited at South Kensington on October 15 by Mr. Goldsmith, The Gardens, Hollanden, Tonbridge, was remarkable for equality of size, symmetry, and general excellence. Conspicuous amongst the varieties shown were Conseiller de la Cour, White Doyenné, Beurré Hardy, Triomphe de Jodoigne, Beurré de Anjou, Beurré Diel, Beurré Superfin, and Bonne d'Ezée. For these a silver medal was awarded.

National Rose Society.—At a meeting of this Society, held on Tuesday, Oct. 15, the Rev. Canon Hole in the chair, the treasurer submitted his accounts, which showed a balance in favour of the Society. The dates for the exhibitions for 1879 were fixed (subject to the approval of the annual meeting), the first to be held at the Crystal Palace on June 28, the second at Manchester on July 14. It was also arranged that a paper of instructions on Rose growing should be drawn up and widely distributed. It was announced that the "Rosarians' Year Book" would be issued, as last year, independently of the Society.

NOTES FROM KEW.

Hardy Climbers.—Excepting the hardy Passion-flowers, by far the loveliest of wall plant now in flower is Solanum jasminoides, from Rio de Janeiro, its drooping clusters of blossoms—purplish when in bud, pure white when fully expanded—in the centre of each of which is a golden cone formed by the stamens, being very charming.

Hardy Herbaceous Plants.—Now that nearly all outside flowers have passed away, the few that remain possess additional interest. Amongst annuals the first is Impatiens amphorata, a native of India, which was mentioned in "Notes from Kew" several weeks ago. This, now that I. glandulifera and many of its relations are quite over, is still a pretty object; it forms a neat, dense bush about 3 ft. high, and is thickly studded with its lovely flowers, the upper portion of which is pink and the lower canary yellow spotted with chocolate. Salvia angustifolia, a native of Mexico, merits special mention on account of it being such a late-blooming sort; it is a vigorous grower, of neat habit, and attains a height of about 3 ft. The lovely deep sky-blue and white flowers are borne in long spikes like those of S. farinacea. Dracocephalum speciosum, about 2 ft. high, bears large blossoms of a somewhat dull purple ground colour, which is spotted with white and darker purple; this rare and interesting Labiate is found in a wild state on the Himalayas at elevations of from 12,000 ft. to 15,000 ft. Erodium Manescavi, with its magenta blossoms, is conspicuous at any time, but much the more so now that outside flowers are scarce; this pretty Crane's-bill is remarkable for its large and handsome flowers and its prolonged flowering season. Abutilon Darwini, a South Brazilian shrub, makes a fine object in the open border during the summer and autumn months; the broadly bell-shaped, drooping flowers (bright orange-red with blood-red veins) contrast well with the bold foliage.

Greenhouse Plants.—The different kinds of Nerine, a genus of South African Amaryllids, are greenhouse bulbs of easy culture and come in very usefully for autumn and winter-flowering. Among the finest at the present time are N. flexuosa with rather broad green leaves and a flower-stem about 2 ft. high, which bears an umbel of eight rose-coloured wavy blossoms; N. pulchella, which has larger flowers, also rose-coloured, but with a deeper band running down the centre of each of the six parts; N. crispa, which is a much less sort with prettily crisped flowers and narrow green leaves; N. pudica, which has narrow, glaucous, Grass-like leaves, and delicate blossoms —white, with a narrow, central band of rose in each of the six floral leaves—and N. undulata (with pink blossoms), which is a stronger grower, and has larger leaves than the last-named species. As a rafter or pillar plant for the greenhouse or cool conservatory, Tecoma capensis, from the Cape of Good Hope, is most suitable; the deep orange-scarlet blossoms studded among the pretty, pinnate leaves are very handsome. Another South African plant worthy of general cultivation for cool-house decoration is Indigofera juncea; its peculiar Rush-like branches bear at their extremities upright racemes of deep reddish blossoms. This plant is alike interesting for the beauty of its flowers and the peculiarity of its growth. Oxalis variabilis, a dwarf kind, not more than 2 in. or 3 in. in height, bears large, deep, rosy-red flowers, fully 1 in. in diameter. Milla subbiflora, a pretty little bulbous plant which does not exceed in size the Oxalis just named, has Grassy leaves and short flower-stalks bearing either one or two porcelain-blue flowers.

Stove Plants.—Billbergia Liboniana has green leaves and panicles of showy blossoms, the lower parts of which are a dark coral red, the upper a dark purple-blue. Arundinaria Khasyana, although quite hardy, makes a most graceful and elegant decorative plant when cultivated in pots in the greenhouse or stove; the arching, plume-like shoots, densely clothed with emerald-green leaves, produce an effect totally dissimilar to that exhibited by any other plant.

Orchids.—Epidendrum purum, a native of Columbia, grows about 1½ ft. or 2 ft. high, and bears panicles—with long, drooping branches —of small, white, aromatic flowers, which, although individually insignificant, are collectively graceful and beautiful. Lælia elegans, with its dark crimson-purple lip, and very light red sepals and petals, is an attractive and handsome kind. L. Perrini, another beautiful sort, has light rose-coloured sepals and petals, and a fringed, trumpet-shaped lip (rather less than that of the last-named), which at the apex is of a deep crimson-purple colour, but shades off at the base into pure white. Cattleya maxima, from Columbia, with its large, beautifully-mottled lip—in which crimson, red, purple, and orange-scarlet, shade off into and blend with each other—is one of the most showy and beautiful of epiphytal Orchids.—†.

Phlox Miss Robertson.—This is, in my opinion, the most beautiful of all the white Phloxes; it is so pure, and the pips are of the finest form. Although classed as an early-blooming kind I have it now in good bloom in the open ground, its lateness being the result of pinching the shoots in the summer, and thus inducing a late growth from the sides and base of the stems. Where there are several plants some might be allowed to flower naturally, and thus be stopped to secure an autumn bloom. Where there are any bloomless points these should now be put in as cuttings, and after the flowering wood has died down the plants may be lifted and divided. In spring also when the young growth is made the weaker growths may be taken off and cuttings made of them.—A. D.

Trichinium Manglesi.—This very beautiful member of the Amaranth family especially deserves a brief notice, as it is one of the most interesting greenhouse plants now in flower. It is not what may be termed a showy plant, but its numerous, small, deep rose-coloured blossoms nestling amongst clusters (about the size of a hen's egg) of dense white hairs, render it a very pleasing and attractive object for a long time. A compost of fibry loam and leaf-mould suits it perfectly, and it should be kept rather dry during winter. It is quite hardy enough for open-air culture provided it be placed on well-drained rockwork with a piece of glass in a slanting position placed over it during winter to protect it from too much moisture. It comes from Swan River, and is one of the numerous introductions of Mr. Thompson, of Ipswich.—W.

Violets in Autumn.—Perhaps "J. G." (p. 345) will be surprised to learn that I have always gathered Violets nine months out of the twelve, and sometimes ten, but I rather doubt whether that can be done in England, owing to its not having a humid atmosphere like that of Wales or Scotland. My plan was to have Violets here and there wherever I had a warm corner to spare in which to plant them. They consisted of the old Russian variety and the Czar, and I also had the last-named variety and the Neapolitan in a frame Now is a good time to plant these in frames. They should be put into good light loam, syringed, and kept close for a few days; then get them inured by degrees to plenty of light and air, and leave the lights off all night when the weather is mild; cut off all runners, and do not disturb the ball more than is possible. I used to make two or three plantings in spring. I generally began in March on a south border; these got established before the hot weather set in, and came into flower first. The late planting I put on a north-east border to take up in the autumn to put in the frames.—T. Elcome, *Aquarium Terrace, Crystal Palace.*

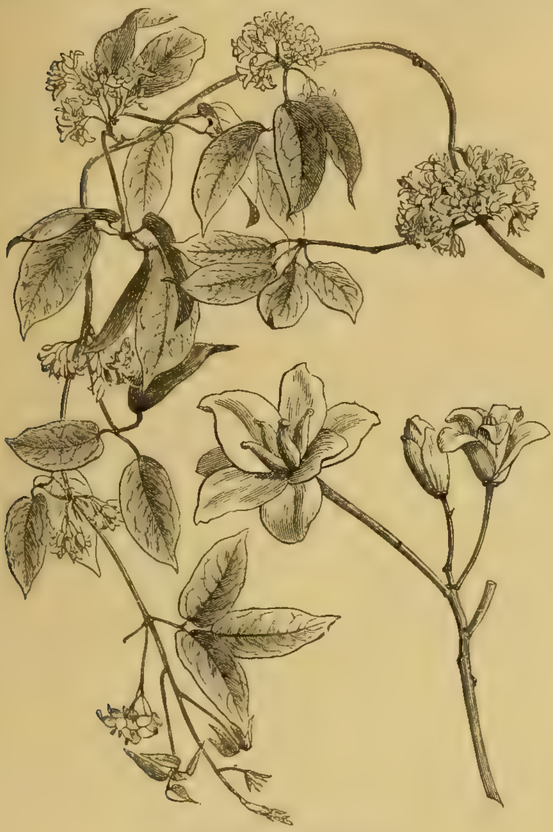
Pelargonium-leaved Erodium (E. pelargonifolium).—This exquisite little plant, which is one of the most beautiful of a rather large genus, is seldom met with in collections, yet its merits entitle it to rank amongst the most select of hardy plants. In foliage it much resembles some of the better known kinds, the leaves being heart-shaped and crisped at the edges and produced in a tuft, from the axils of which spring the slender flower stalks from 6 in. to 9 in. long and bearing in an umbellate manner several blossoms about ¾ in. across; the three lower petals are pure white, the two upper ones blotched, and delicately pencilled with purple, and edged with white. It bears a continuous crop of flowers throughout the summer and autumn. Being rather tender and impatient of excessive moisture during winter, it should be grown on rockwork well drained amongst other small-growing kinds, and it is advisable to put a layer of broken sandstone around the neck of the plant as a protection from the dampness of the soil. It is, I believe, a native of Southern Europe, and an excellent figure of it was given in Regel's "Gartenflora" in 1852.—W.

Gaultheria procumbens.—How seldom one meets with this charming little shrub among hardy plants, and yet it is a real gem. A neighbour of mine, who has a most interesting garden of hardy plants, grows this pretty Gaultheria well; he has it planted out in one of his beds in a full exposure, but with a flat stone placed upright next it on the sunny side. This, without shutting out the sunlight from the foliage, serves to keep it from striking directly on the roots; it is always cool there, and it blossoms freely and produces its berries well. It is planted out in sandy peat. I have a good plant of it in a 7-in. pot that is now very attractive by reason of its drooping white flowers, the rich red of its berries, which hang on for a considerable time, and the striking claret colour of its young leaves. I tried it with greenhouse culture, but the flowers dropped, and berries did not follow; but since I have kept it out-of-doors during the summer, it has matured its berries, and is now the pretty decorative object which I have represented it to be.—D.

Melanthium triquetrum.—This is the name of a bulbous-rooted plant, little known to cultivation, now blooming with Mr. Ware. It has long, round leaves, like those of some of the Alliums, and its flowers, which are small and have delicate mauve petals and a purple centre, are very pretty, and are produced on spikes from 5 in. to 6 in. long. It is a half-hardy plant, and well worth culture in pots in a cool greenhouse.—S.

THE FLOWER GARDEN.

HOLBOELLIA (STAUNTONIA) LATIFOLIA.



Holboellia (Stauntonia) latifolia.

The genus Holboellia with the allied genera Stauntonia, Akebia, Lardizabala, and two or three other small ones constitute an order or sub-order of shrubby-climbing plants remarkable rather for the elegance of their foliage than for the splendour of their flowers. Two or three of the genera Lardizabala and Boquila, comprising three species, inhabit Chili, whilst the others are from the mountains of Northern India, China, and Japan. All the members of this group hitherto introduced are hardy in the southern or south-western counties of England and Ireland and along the western coast of Great Britain, but in other parts they should be treated as cool greenhouse plants. Several of them, as Holboellia latifolia, Stauntonia hexaphylla, and Lardizabala biternata, are very rampant climbers, quickly covering large spaces. The accompanying engraving represents a very much reduced branch of Holboellia latifolia, and a portion of a cluster of flowers of the natural size. This plant, which has a wide range of distribution in the Khasia and Himalaya Mountains, was introduced into this country many years ago. Dr. Lindley gave a coloured figure of it in the "Botanical Register" in 1846 from a plant which flowered "perhaps for the first time in Europe," on a south wall in the garden of Mr. L. W. Dillwyn, at Sketty Hall, near Swansea. It flowered in March, and had received no protection beyond that afforded by the wall. It still exists, especially in some gardens in the south-west, as it is occasionally sent to us to name, but, like some of its allies, it is not a favourite indoors, where it grows too vigourously and rarely flowers. In its native country it inhabits the mountain woods from an altitude of 4000 ft. up to 9000 ft., and is exceedingly variable in the size, configuration, and number of leaflets forming the leaves, as well as in the tinge of the flowers, which are green, nearly white, or more or less tinged with purplish-red. Most of these differences are, doubtless, due to the altitude and situation in which the plant grows, whereas others may be ascribed to the age and degree of vigour. The stem sometimes attains a diameter of 4 in. to 6 in. and the leaves have from three to nine leaflets. In the branch here figured they vary from three to five. Two distinct varieties are distinguished in Hooker's "Flora of British India," namely, H. latifolia, having three to five ovate or oblong leaf lets, and H. angustifolia, having seven to nine narrow leaflets. Lindley and Paxton, "Flower Garden," plate 45, figure under the name of H. acuminata a variety with abruptly-pointed leaves and purple-tinged flowers. The young pistil usually consists of three (four are shown in the figure) carpels, of which often only one or two attain maturity. When ripe they are fleshy, oblong berries 2 in. to 4 in. long. The fruit, which is figured in The Garden (Vol. VIII., p. 548), is not exactly luscious; but it is eaten by the natives of Nepaul. Holboellia latifolia is perhaps better known in gardens under the name of Stauntonia latifolia, but it differs from the true Stauntonias in the stamens being free from each other, and in having six minute petals within the six sepals; the latter only are shown in the figure. It should be mentioned, however, that after the name Holboellia had been given to these woody climbers, the author, Dr. Wallich, thought they were not sufficiently distinct to form a genus separate from Stauntonia, and accordingly applied the same name to a very singular genus of Grasses. This genus, now renamed Lopholepis, consists of a single species, figured in Hooker's "Botanical Miscellany," vol. ii., plate 76, as Holboellia ornithocephala. This name has got into some gardening works as a congener of our plant. Respecting the merits of Holboellia latifolia, it has been described as one of the best hardy evergreen shrubs in Devonshire, where it succeeds well on walls of any aspect. It soon covers large spaces, making annual shoots 10 ft. to 12 ft. in length. Old plants flower profusely out-of-doors, as various writers testify, and, although the flowers are of a dull colour, they are highly fragrant; indeed, it has been asserted that their perfume is superior to that of the Orange blossom.

W. B. Hemsley.

BEST WAY OF WINTERING TUBERS AND BULBS.

The winter treatment of these depends much on circumstances, especially as regards soil and situation, for although it would be perfectly safe to leave out such plants as Salvia patens and choice Gladioli in some places, to do so in others would be almost sure to lead to their destruction. This would be the case in cold, wet land, as there the fleshy roots decay and conduct the rot to the base of the bulbs or tubers, and once they begin to go in this way they are not long in losing their vitality altogether. It is not so much the action of frost or cold, as it is a well-known fact that one of the tenderest tubers of all, the Potato, will live if buried only a few inches deep, but then its nature is such that it does not absorb moisture in the way other tubers do; hence its immunity from the ills to which they are liable if left out under similar circumstances. There can be no question that where bulbs and tubers can be kept with safety in the ground the whole year round they are far better and stronger in the spring than those that are lifted, as however well they may be stored, they will in a measure become more or less shrivelled; whereas if left where they grow, their weight and size would rather increase than diminish. Nothing shows this more strikingly than Gladioli, the corms of which are not generally half so large and plump at the time of planting as they are when taken up; and it must be obvious that what they have lost is so much strength gone, and therefore the flowering spike cannot come so fine as it otherwise would do. Having a very light, dry soil to deal with, I never hesitate to leave such Gladioli as I have out for the winter, except it may be any fresh choice varieties that I do not like to run any risk with, and I always find that they are in every respect much superior to what they were when they were dug up and stored. This is not to be wondered at, as they are altogether under more natural conditions; but there is one thing which I find much in their favour at the time of planting that should not be omitted, and that is to scatter some clean-washed sand about them so as to keep the soil from coming in immediate contact with them. If this be done it counteracts any tendency to decay by insuring free drainage, to aid which the beds or positions where they are grown should be deeply trenched or broken up and have plenty of leaf-mould or other decomposed vegetable matter worked into them. Treated in this way and planted in a sunny aspect, Tritonia aurea does remarkably well, and comes with fresh, healthy-looking green leaves free from red spider, an insect that always sadly disfigures it when grown in a pot in a house. This beautiful free-flowering plant is generally considered tender, but planted out in a border and protected a little during the winter it will endure any amount of cold, and supply bloom in abundance for cutting. Ixias, than which there is not a more lovely class of plants in existence, may be grown in the same way, but to do these well the border, which ought to be under a south wall, should be well drained and specially prepared by having plenty of sharp sand and light mould added, after which, all that is necessary is to keep out severe frost by strewing a few inches of sifted leaf-soil over the surface. This will lie close, and is one of the best non-conductors that can be used; besides which, it is so neat as a top-dressing that its appearance cannot be objected to. A little heap of it placed over the crowns of any bulbs, or around the collars of any plants of doubtful hardiness forms a fine protection to them, and a store of it should always be kept for use for that purpose at this time of year. As regards Dahlias, the only way to insure their safety is to take them up immediately frost kills down their tops, and lay them in any shed where the tubers can be covered over with dry soil. To leave them without this for the air to act on them produces the evil results already referred to, and yet one often sees them hung up and subjected to the dessicating influence of the atmosphere. In the case of bulbs and other tubers that have to be taken up from soils that are stiff and heavy, the best way of wintering them is in paper bags or in small boxes of dry sand in a room or shed, where frost can be excluded without the use of fire or other means of warming it. So favoured, they gradually form roots and start steadily in the spring, much in the way they do in the open ground, but the planting requires to be carefully done, in order that they may not be injured. For years I have had Salvia patens out in winter, and very fine, when fully established, it is, many being quite bushes, with stems 3 ft. high. Such masses of rich blue flowers have a grand effect.

S. D.

—— As regards bulbs of Gladioli, they will, doubtless, winter safely in the ground, as I have found that many of the commoner kinds live throughout the winter scarcely covered with soil at all. My impression is, that lifting Gladioli and storing them in dry boxes has nothing but custom to recommend it. That they withstand such treatment and grow after it is rather a proof of their amount of vitality than of their being benefited by it. Roots like those of the Canna or Indian Shot left out in beds all winter protected by external coverings grow perfectly well, and they are surely as tender as Dahlias or Gladioli. The fact is, we have killed many plants with kindness, and weakened the constitution of many more by excess of heat at all seasons of the year. It is asked (p. 331) why Bouvardias are not available for open-air decoration, and the advice given in the "Gardeners' Assistant" as to this plant needing a high stove temperature is quoted. Yet we all know that this plant is grown in cold frames and even in the open air, and sent to market in quantity in finer condition than it ever attains in our stoves. This is only one of the numerous examples of how we cling to old practices. J. Groom.

UTILISATION OF THE CLEMATIS.

Many attempts have been made to induce the showy hybrids of C. Jackmanni to conform to the strict formality required in the flower garden, and though now and then a good group has been met with, yet the adaptation has not always been a success, and unless they could be used in combination with something else, the short period of their duration will be a bar to their employment in any design requiring a fair amount of durability as regards effectiveness. But though the Clematis is not exactly adapted for the geometrical flower garden, it is eminently suited for an isolated group, and it is always at home when rambling over a rustic arch, an old tree stump, or hanging over the precipitous sides of some rocky cliff. Clematises in any or all forms, too, are good wall plants, especially when used in connection with something of an evergreen character, like some of the less robust-growing species of Ivy. When used for clothing rustic arches they should not be too much or too closely trained. Early attention must be given, or the shoots will get into inextricable confusion, but once get the space fairly covered, then allow the ends of the shoots to festoon in graceful tresses, and the effect will be better than if too closely trained. Clematises are best pruned close back for two or three years after planting; it strengthens the base and induces the production of long, vigorous growths. This pruning should be done in spring just before growth begins. Although a great improvement has undoubtedly been effected by cultivation in this family, it has, up to the present time, been mainly in one direction only. The early-flowering species, such as C. montana, have not yet, it appears, attracted the attention of the hybridist, or if they have, but little headway has been made. If, however, it were possible of attainment, it would be very desirable to possess a variety of montana, with its early, free-flowering habit, and with mauve, blue, or purple-coloured flowers. This species is one of the most vigorous of growers; it often has stems thicker than one's arm, and branches many ft. in length. It will quickly clothe a very large space, and it is not particular as to soil or site; but, like all Clematises, it should have a well-drained situation. I once saw an outbuilding completely enveloped by this species, and when in flower in April and May it looked like a huge mound of snow, so densely was it covered with pure white flowers.

The introduction of the new hybrids has led to their cultivation in pots, and as they yield readily to that mode of culture, a new and interesting feature can be brought to bear in beautifying the cool greenhouse or conservatory, and the colours of the new large-flowered varieties come purer and brighter under glass than in the open air. They also do well planted out in the border, and trained up the rafters or on the back wall. A collection, embracing the different colours, planted in an unheated colonnade would also attract attention and arouse interest anywhere, more so, I think, than if grown in pots. C. Flammula, one of the earliest introduced species, is still to many the most delightful. It flowers in the autumn, and though its blossoms are small, there is ample conpensation in their delicious sweetness and the profusion in which they are borne. As a wall plant or for covering arches its usefulness and beauty are well known and appreciated, and few plants make better single specimens for the lawn when supported by something slight and inconspicuous, and at the same time strong enough to resist the force of the wind. It should be allowed in the matter of growth to have pretty much its own way. Like our own British Traveller's Joy (C. Vitalba) when the flowering is over it is not altogether shorn of its beauty, for the long feathery styles of the ripe carpels have a singular and charming effect. I saw a short time ago a very handsome specimen on the lawn at Hewell Grange, in Worcestershire. It was supported by a light iron umbrella-shaped trainer, which it had completely covered and overhung on all sides, producing a charmingly fresh and graceful effect. E. Hobday.

TRANSPLANTING LILIES AND LILIES IN POTS.

Mr. Uphill's answer (p. 354) to my query (p. 305) makes the task of replying comparatively easy, though, unfortunately, he does not specify the kinds of Lilies he is cultivating. The early part of November is a great deal too late for transplanting the general run of Lilies. In my paper (p. 303) I have said: "During this last season I have lifted and replanted all my collection as the different kinds went out of bloom." In the cases of L. speciosum and L. auratum I did not even wait until the fading flowers had all fallen so much value do I place on the new bulbs being allowed to continue their growth without the chance of a serious check. Believers in the perennial theory will not be able to comprehend this, though those who believe in the successional bulb system will understand my meaning at once. There is no doubt but what the "dozen bulbs" mentioned by Mr. Uphill as having made no signs of life above ground must have met with a serious check by their having been lifted and replanted so late as December. In such cases there is to me nothing new. The original roots and scales too would, of course, be gone, though he might not have noticed this; and so will the succession bulbs if something be not done to save them. But this, I trust, Mr. Uphill has already done, namely, lifting and giving them a sufficiency of fresh, nourishing food. In answer to "A Lover of Lilies" I would say: Do not leave your Lilies in the same pots, but shift them at once (if not done already) into new ones, giving them an entirely new supply of fresh congenial soil. The "size" of the pots is often a matter of convenience, but, as respects the bulbs, the pots may be too small, but they cannot be too large, nor can the food be too large in quantity, for it is the peculiar nature of Lilies to be very greedy feeders. As to the "soil in which to pot them," Lily growers differ greatly. But, taking into consideration the nature of the roots and the new bulb itself, I know of no better soil for L. auratum and speciosum—both for pots and the open ground—than pure sandy, friable peat. This kind of soil is peculiarly adapted for the lower fibrous roots which, by the aid of the microscope, may be seen to be literally covered with minute hairs which absorb a great deal of sap for the supply of the bulb. As to "cutting down the stems," so soon as the plants go out of bloom I cut down the stems to within 2 in. or 3 in. of the soil, just leaving sufficient to form a handle in transplanting. This I would do in the case of all kinds of Lilies in pots as well as in the open ground; my reasons, I think, I have given somewhat fully in recent papers. "A Lover of Lilies" has certainly not treated his L. auratum as he should have done; but I am glad to see that he is already convinced that he was wrong. He should not have allowed the stem to wither away. This is, I admit, a very common custom; but it is a very reprehensible one. He should have cut down the stem as soon as the plant went out of bloom, re-potting it, and then the pot might have been placed on a spare shelf, and the soil kept moist; for, remember that some part of the successional bulb is, or should be, always growing. The stems of the successional bulbs may increase in size, and so may the bloom, but this will depend entirely on culture; as, on the other hand, a want of proper attention may cause them to decrease, and, in fact, may cause the loss of the bulbs entirely. As to increasing plants of L. auratum and speciosum, this may be done by picking off any offsets that may appear when re-potting and replanting them in pots, or in some spare place in a warm border. A fruitful source of injury to the successional bulbs is the "stem roots," which some actually encourage by top-dressing and heaping up the soil around the lower part of the stems. These stem roots are some of them of great length; they go down, and not only impoverish the soil, but they twine themselves in and out among the scales, suck out the sap, and destroy the bulbs for the next season's bloom. Rose growers wage war against suckers coming up; Lily growers should wage war against suckers going down. Every now and then remove the soil for 1 in. or 2 in. deep, and then carefully clip off every vestige of a stem root, returning the soil again. A professional writer says, "As the flower stems advance in growth, they put forth a number of young roots from the stem above the bulb; when that is perceived, place round each stem some rough, hard pieces of manure for these roots to strike into; this will encourage the flower stems to grow strongly and flower firmly, besides increasing very much the size of the bulbs below." Worse advice than this it is difficult even to imagine. Dunedin.

—— Will you allow me to correct an error in my note on transplanting Lilies (p. 332)? "They should be moved when *not* at rest" is a misprint for *most* at rest.—Geo. F. Wilson, *Heatherbank, Weybridge Heath.*

WINTERING PELARGONIUMS.

The plan we adopt here for wintering all young stock of Pelargoniums, and it is one I can strongly recommend, is to put three cuttings triangularly around the sides of a 3-in. pot, in which they are propagated in August. It is not the quantity that has to be particularly considered, as one good plant will do more towards filling a bed and making a display than two or three poor ones, and in wintering them in the above-named way they can easily have a little more space afforded them in the spring by setting the pots further apart, whereas in boxes they must remain thick as they are till they can be singled out separately, and to do this much room under glass is required. For all purposes of bedding, one-year-old plants are preferable, and it is surprising what a quantity of these may be kept packed away in boxes such as your correspondent "J. G." describes (p. 322). In order, however, to preserve them from damping off, they should, if possible, be taken up before they are injured by frost and then cut hard back, leaving only a joint or so to a shoot, and the roots may likewise be shortened considerably. This done, the next thing is to pack them in rows across the box, and fill in amongst them with light sandy soil as the work proceeds, after which they should have some water to settle the earth about them, and then be set on light, airy shelves or other similar positions near the glass. There they will gradually break, but having so little foliage, they will not require water beyond what is necessary to keep them from shrivelling up, as the drier they are kept during the winter the better. In spring if pots and room be not over plentiful, a good way of treating such plants as these, or young stock either, is to take a handful of soil and a piece of Moss and tie their roots up in it, when they may be plunged in leaf mould in any spare frame till the time arrives for turning them out in their summer quarters. Managed in this manner, it has a restricting influence on their growth, and causes them to flower with remarkable freedom, very different from what they do when their roots have full liberty to ramble wherever they will. Plunging them in pots has a similar effect, and such plants come in admirably for vases or for similar purposes the following year. S. D.

BOG PLANTS IN BOTANIC GARDENS.

The best way we have seen for growing the various running-rooted and rapidly-growing bog plants is in the Botanic Garden at Munich. The question is of some importance for others than curators of botanic gardens, for the culture of bog plants has of late years had some more attention paid to it in private gardens. No plants are more interesting among hardy flowers than various species that bloom in bog or marsh land. To cite a few of those in cultivation, we may mention Rhexia virginica, Calla palustris, Cypripedium spectabile, the commoner and hardiest Sarracenia (S. purpurea), Helonias bullata, the Bird's-eye Primrose, the various Butterworts, and a number of others, many of which are not in cultivation. If one tries a number of these in a well-made artificial or any other bog, the probability is that they will very soon be overrun or injured by rampant Sedges, or some of the many too vigorous bog and waterside plants (planted in a moment of weakness, or that have been introduced in the bog earth). These destroy any kind of success or pleasure with a bog garden, as even Bindweed is easy to eradicate compared with them. And yet some of these plants are very ornamental and singular, as, for example, the taller and larger species of Scirpus, such as S. Rothii, Cyperus longus, and various kinds of Carex. In the Munich Garden these are arranged, so as to be out of harm's way, in long cemented canals, so to say, nearly 18 in. across. There are divisions somewhat below the water line for each species, a length of 4 ft. or 5 ft. being allowed it. These little canals are sunk in the earth, and run between beds of hardy plants about 7 ft. wide, the small canals forming, so to say, an "alley" between the beds. So arranged, a great variety of marsh plants are grown better than we have ever seen them before. Each species is kept distinct, and cannot easily overrun or exterminate its neighbour, while every part of the plants can be easily seen by the student or the cultivator. A little way off one scarcely noticed the cemented canals, owing to the way in which they were placed between the beds.—V.

MENTZELIA ORNATA AND OTHER SPECIES.

"V." asks (p. 332) for information respecting the culture of this lovely biennial. As far as my experience goes I find it necessary to sow the seed as early in the season as possible, and to grow the seedlings on in a frame, giving liberal shifts, using a compost of fibry loam and a small quantity of leaf mould and sand. After the final shift they should be plunged in a sunny border until autumn, when they should be removed to a frame for wintering. In the spring they should be again plunged in the open air, and by assisting them with weak manure water occasionally strong and healthy flowering specimens will be the result. When beginning to show flower they should be removed to a cool greenhouse or frame, as excessive humidity at this stage is injurious to them. The large size and beauty of the flowers amply repay the extra attention they require, though they may be grown entirely in the open air, and with good results if the weather be favourable, yet in our climate the former mode is by far the most satisfactory. The following is a selection of the most showy of those that are at present in cultivation. With regard to the others the flowers are rather small, and, on the whole, scarcely worth the trouble of cultivating.

Elegant Mentzelia (M. ornata) is a biennial, growing from 2 ft. to 4 ft. in height, of a branching habit, with leaves 4 in. to 6 in. long, irregularly lobed almost to the midrib, and are, with the branches also, covered with numerous barbed hairs. The flowers are borne singly at the apex of the branches, and are from 2½ in. to 4 in. across, composed of ten petals, the inner five being rather smaller. The colour is a creamy-white, and they are also fragrant. It belongs to the vespertine section of the genus, or those in which the flowers fully expand only towards evening. It is found growing in clayey soil on the banks of the Missouri and other places, and, though long known to science, is not as yet very common in cultivation, but should be sought after by every lover of plants.

Naked-stemmed Mentzelia (M. nuda) is also a biennial, 2 ft. to 4 ft. high, with foliage much resembling the preceding, but with scarcely any hairs on them or the stems. The flowers much resemble those of the last both in size and colour, and expand about the same time in the day. It is a native of the gravelly hills in Oregon, extending to California.

Smooth-stemmed Mentzelia (M. lævicaulis) is another fine kind, with whitish stems 1 ft. to 3 ft. in height, and with leaves much resembling the last, both covered with short and stout bristles. The flowers terminate the branches and are about the same size as the preceding, but are of a rich, deep yellow colour, and unlike them also in only opening in bright sunshine. It is of biennial duration, flowering in June and July in the second season after sowing. It is a native of Oregon and California.

Few-seeded Mentzelia (M. oligosperma) is a perennial growing from 1 ft. to 3 ft. high, with oblong and toothed leaves; flowers terminating the branches, about 3 in. across, of a bright yellow colour, and opening in sunshine. It flowers annually from May to July. It is found in rocky places on the banks of the Missouri, and also in the prairies and plains.

The mode of treatment, recommended for M. ornata, is applicable to all the others, except the last-named, which, being a perennial and flowering early, should be grown on well-drained portions of the rougher parts of a rockery, and in severe weather should be afforded a layer of mulching on the surface of the soil. Of course, in some favoured localities, where they are generally free from excessive humidity in autumn, the others may be grown and flowered under similar treatment, but that is the least satisfactory mode of treating them. W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pelargoniums Grouped.—The sight of these plants in rings and lines is so familiar, that a little mass of plants of a scarlet kind, forming in a public garden at Vienna an irregular and small group on the Grass in a green nook, surrounded by trees and shrubs, deserves a note of commendation. The effect was such as any one could enjoy; the brilliancy afforded by only five plants was intensified by the verdure of the Grass and evergreens, and there was no geometrical twirling to divert attention from the essentials of the little picture—the plants.—V.

Early Primroses.—We have already quite a display of the hardy double white Primrose, and it is greatly prized for its purity and sweetness. Where no heated structure exists for furnishing cut flowers during the winter, such plants as this should receive a little protection, as they fill a void that would otherwise occur, and that, too, when flowers are most appreciated.—James Groom, *Linton Park, Maidstone.*

Cyclamens Planted Out.—Cyclamens, though ordinarily grown in pots, thrive best when planted out. We are now lifting a quantity of them, just producing a dense mass of flower, that have been planted out in frames where a temporary protection could be given them during extreme changes of temperature. One of the reasons why Cyclamens planted out start with greater vigour than those in pots is that they never get so excessively dry as those in pots often do. An ordinary flower-pot offers but poor protection against a scorching sun, unless it is plunged in some non-conducting material.—J. Groom.

Earliness of the Chrysanthemum.—I have a large bed of Mrs. George Rundle Chrysanthemum now in good flower, and should the weather remain open it will be fully in bloom by the last of the month. I had purposed lifting them to flower under glass, but they are ready before I am, and, further, are blooming far too early, as flowers in December are more valuable than now. These plants have not been pinched, and their present state indicates exactly natural growth. No doubt I ought to have pinched them early, but Mrs. G. Rundle flowers so freely from the side shoots that it does not need stopping, except to ensure very late flowers. Should the weather hold open and dry the bloom will be as good outside as under cover.—A. D.

Fuchsias amongst Ivy.—The objections raised by Mr. Smith, Newry (p. 346), against carpeting a bed of Fuchsias with Ivy seem to me to be unsatisfactory. The very purpose of my proposal (p. 321) was to afford the stools of the Fuchsias during winter the natural protection which a covering of Ivy would give, and Mr. Smith seems to forget that the very essence of outdoor Fuchsia culture lies in giving the plants where they stand such protection in hard weather as shall enable them to be permanent deciduous shrubs, and not birds of passage flitting from house to bed and from bed to the house as the season changed. There are thousands of examples of successful permanent Fuchsia growth about the country, and Mr. Downie has told us of miles of permanent plants of Riccartoni on the west coast of Scotland, but there are plenty of such nearer home that are cut back every winter, and, starting again, make fine bushes several feet in diameter during the summer. What Riccartoni will do others of a free-growing character will doubtless do also if encouraged. In planting a bed of Fuchsias as previously suggested, it does not follow that the Ivy should be so thick as to prevent the application of liquid manure or water if required, but as the thickest coating is needed around the stools during winter, it is evident that the Ivy could be cut away all around the Fuchsias in the spring, the soil be forked up and manure given. The Ivy would of course cover the soil again during the summer, but not to root into it to any considerable extent. There need be little difficulty about the plan if done with good will and with an anxious desire to make it successful. Whilst so much energy and labour can be expended in the planting and care of carpet beds that last only for a short season, it is not too much to ask for just a little attention to be paid to my proposed Fuchsia bed.—A. D.

—— I cannot quite coincide with the opinion expressed by Mr. Smith regarding Fuchsias amongst Ivy. According to what I have seen of the hardy Fuchsias, they appear to be able to thrive under circumstances to which most other flowering plants would succumb. There is no doubt that Fuchsias enjoy liberal treatment; but I have, at the same time, observed them flourishing amongst trees and shrubs, where both moisture and nutriment were at a minimum. With respect to their association with Ivy, an instance came under my notice of a plant that flowered well every year, springing up each season from amongst the Ivy with additional vigour, and not a particle of manure of any description was ever given to it. I believe that the better way would be to grow the Fuchsias liberally for a season, getting them well established, and then plant the Ivy; the Fuchsias would, by that time, hold their own. At any rate, it is an experiment well worth trying.—J. Cornhill, *Byfleet.*

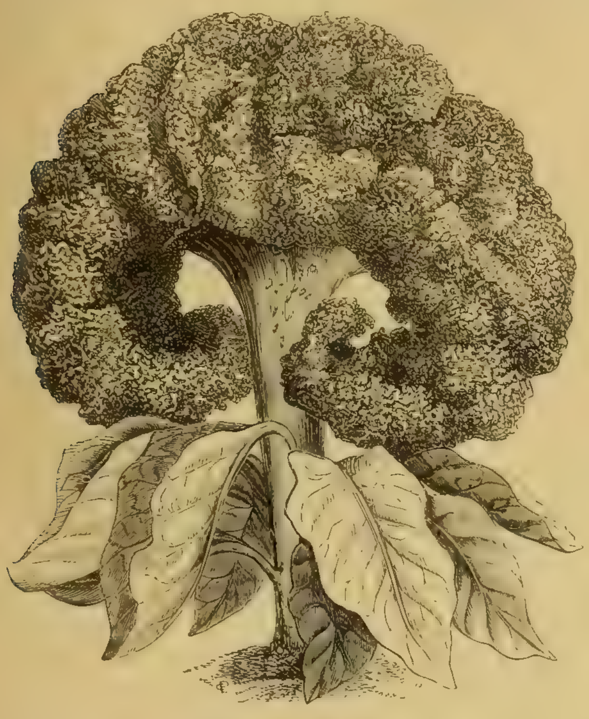
Florists' Varieties of Fuchsias for Open-air Culture.—Some of your correspondents have directed attention to the value of the florist's varieties of the Fuchsia for open air decoration, a purpose for which, though but seldom employed, they are eminently suited. Long as we have possessed the Fuchsia in many and variable forms of colour and growth, its capabilities in this way appear never to have been generally recognised. Probably our eagerness for close-growing, dwarf, flowering subjects has had something to do with the matter. The Fuchsia is just one of those plants that cannot well be made to fit into geometrical designs; it has a free natural growth of its own, which will not admit of much restraint. It has, therefore, been in a great measure banished from our pleasure grounds. When we take delight in seeing plants develop themselves as Nature intended them to do, we shall then fully prize the good properties which Fuchsias possess when allowed the privilege of a free, unrestricted root run. Those who have hitherto grown Fuchsias in pots can only form but a slight idea of the luxuriance and flowering capabilities which they exhibit when planted in rich soil. When it is intended to form a bed of them, or to plant them in isolated positions amongst shrubs, the soil should be well prepared, as the more nourishment the finer the growth will be. They should be planted out early and kept well watered, otherwise they fail in freedom of growth. If protected in winter they will during the next and succeeding seasons spring up with renewed vigour, and towards the autumn, when zonal Pelargoniums are beginning to look shabby, the Fuchsias will be fresh, bright, and handsome. Many growers of the Fuchsia are loth to discard their old pot-bound plants; but by planting them out they have the satisfaction of still possessing them, and at the same time make room for young thrifty specimens, which, for pot culture, are better than the old, worn-out plants.—John Cornhill.

Lychnis coronata grandiflora.—I have only met with two plants of this in my lifetime; the last one which I saw was in a botanic garden. In both cases the plants died, and, this being so, I should imagine that it is a difficult plant to manage, especially when young—a fact which may account for its scarcity. "K. L. D." (p. 345) may well be proud of her plant, and feel assured that the flower is the proper colour, as most of the plates in the "Botanical Magazine," in which scarlet, red, or orange enters, seem through age to have undergone some chemical change, and notably so in the figure of the scarlet Lychnis.—Thos. Williams, *Ormskirk.*

Plumbago capensis in Paris Parks and Gardens.—During a recent visit to Paris I was much struck with this plant as used in the Paris parks and gardens. To my mind, no other plant was so effective or gave such an air of refinement and grace to its surroundings as this did. A large elongated bed in the Parc Monceau was entirely filled with it. The plants, too, grow away most vigorously, being 5 ft. to 6 ft. in height, and bushy in proportion, and they were producing such clusters of flowers as are never seen in conservatories. Evidently it is one of the best bedding plants for that climate, as one meets with it in every direction. I do not remember to have seen it used at home in this way, but it was altogether so charming that I intend growing on the Paris fashion in my bedding arrangements next year, for though one cannot expect it to do as well in our climate, it was so good there that if it only does half as well with me I shall be quite satisfied.—W. W. H.

GIANT COCKSCOMB.

Subjoined is an exact portrait of the gigantic Cockscomb sent to us the other day by Messrs. Carter & Co., of High Holborn. The comb measured 3 ft. 2 in. lengthwise, and in the thickest part 1 ft. 4 in. across. The leaves were large and healthy, and the comb itself of the richest velvety crimson, very double and highly ornamental. It is called the Empress Cockscomb.



Cockscomb 3 ft. 2 in. by 1 ft. 4 in.

FLORAL DECORATION IN CHURCHES.

(Harvest Thanksgivings.)

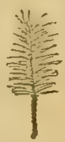
Some years back churches were seldom decorated, except at Christmas, but now it has become customary to decorate them at Easter, and also during harvest thanksgivings. A pretty example of this style of decoration was observable in St. John's Church, Upper Norwood, on October 13, where a service of the above description was held on that date. The decorations were not very extensive, being confined to the chancel and font, but they were very chaste in design, and a description of them may prove useful hereafter to those who are interested in such work. Round the base of the font, which is of stone, were grouped pot plants, and behind these rose a few stems of Asparagus, which were very light and feathery-looking. On a ledge above the plants lay different kinds of harvest produce, not even forgetting Mushrooms, and round the edge of the basin was a heap of Moss, reposing on which were blooms of Eucharis, white Asters, and other white flowers. Out of the centre of the basin rose a graceful Palm, and round the hedge were hung bunches of Grapes and Vine leaves, and one long spray of Passion-flower in fruit drooped over and was twined round the pillar of the font with good effect. The Passion-flower is a most useful plant for decorative purposes, being equally effective in bloom and in fruit. The chief decoration of the pulpit consisted of long Fern fronds and a few blooms of Eucharis. Across the chancel, dividing it from the body of the church, was a pretty little screen in the form of Gothic arches made of Pampas Grass springing from a prettily decorated base. From the highest part of each arch hung a bunch of Grapes; along the top ran a fine wreath of berried foliage, and in the little triangles formed by the arches and wreaths along the top were stars of crimson and brown-tinted leaves, which showed up well against the dark green background. The choir stalls and reading desks were decorated as follows: Over the front of the stalls was draped a piece of crimson cloth about 1 ft. wide; from the edge of this hung a fringe formed of Wheat ears, with a beading composed of sprays of small, dark green-leaved Ivy, through which at intervals were interspersed little bunches of Acorns and Oak leaves, and between each bunch of Acorns was a small, bright gold-coloured Tomato. Along the top of the drapery, at about 5 in. apart, were triple ears of Wheat arranged in the form of spear-heads, and across the stalks ran a wreath of silver Ivy, each leaf being not larger than a sixpence. The fronts of the reading desks were decorated in much the same style, except that the crimson cloth was narrower, and at the top of the straw fringe, in place of the Ivy wreath, was one composed of tinted foliage, through which were worked in little bunches of light and dark Grapes, Cob Nuts, and Acorns. The upright ends of the desks were outlined with small-leaved Ivy and trellised with fine wreaths of tinted foliage, such as the crimson leaves of the Blackberry, Virginian Creeper, Silver Poplar (the white side turned out so as to show off well against the crimson creeper), brown Oak leaves, dark Ivy, and such like, with little bunches of light and dark Grapes at intervals, and where the wreaths crossed they were stopped with a small-sized red Tomato. The top of the trellises were finished off with large bunches of Grapes hanging against a mat or background of Vine leaves, one bunch to each desh, the light Grapes being on dark, brown-tinted leaves, and the dark ones on crimson-tinted foliage. Large bunches were also similarly arranged in front of each desk, and the tops of the desks and stalls were finished off with sheaves of Corn, some Barley, and Oats, each sheaf being bound with sprays of Ivy, and the Ivy sprays joined with a band of berries of the mountain Ash. Under the stalls ran a wide wreath of Corn with plumes of Pampas Grass at the back at intervals. The back of the communion table was quite a reredos formed of flowers and foliage. The form was almost that of a half circle, and this arch was a solid formation of Brake Fern fronds worked into Moss; it was edged with Corn and large bunches of mountain Ash berries. Inside of this wreath was one formed of bunches of dark Grapes. In the centre was a cross also formed of dark Grapes edged with Corn, and four rays were formed out of the cross with four Arum blooms. On the table were four bouquets composed of white Asters, Eucharis, Primulas, Pancratium fragrans, scarlet Pelargoniums, Allamandas, and light Fern fronds, while at each side were staged growing plants with Corn and other harvest trophies at the base. In the afternoon a children's harvest festival was held, all the children being expected to bring fruit or flowers. At the conclusion the flowers were taken to the Children's Hospital in great Ormond Street, and the fruit to the Newport Refuge for Homeless Boys.

Annie Hassard.

Ivy Growing in Houses.—It may interest "V." (p. 362) and others to know that Ivy is largely cultivated in many places in England. For dwelling rooms, as a rule, it is most satisfactory when planted in boxes and trained on wire or wicker-work trellises, so that when not required it may be moved out-of-doors, to be thoroughly cleansed from dust, &c. Indoors it may be trained in any form, either round doorways, pier glasses, or window frames; it will keep for months in good condition, and, as it requires but little root-room, a small box will suit it, and, if necessary, spaces may be left for a few flowering plants at the base. But perhaps the best effects are produced in corridors or covered ways which are only partially lighted. We have here such a corridor running the whole length of the mansion, and it is densely covered with Irish Ivy, which, either by day or under artificial light, has a charming effect. The culture of Ivy is so simple, that it is frequently allowed to fall into neglect and, consequently, into disrepute from its receiving no attention at all. When allowed full scope on a roof it soon disturbs both slates and tiles; but when kept closely cut in, so that young foliage may be freely produced, it will at all seasons be bright and cheerful.—J. Groom, *Linton Park.*

PROPAGATING.

Cape Heaths.—All the free-growing varieties of these, such as hyemalis, Willmoreana, Sindryana, and others, are best increased in March and April. The cuttings, which must be young and fresh, should be made as represented by the accompanying illustration. The leaves should be carefully cut off with a small sharp knife, or a pair of small propagating scissors, which are much the best. The cutting pots for all sorts of Heaths must be prepared with care, in order to ensure success; 4½-in. and 6-in. pots are best for the purpose; a 2½-in. pot should be inverted at the bottom, and the space around it should be filled up with crocks broken small, and the dust sifted out of them. The soil must be half peat and half sand sifted fine; some of the rough, or siftings should be placed level over the crocks, then fill up with fine soil and press all down firmly, leaving ¼ in. at the top to fill with silver sand which has been previously washed. It must not be patted down, but pressed rather firmly and level; sprinkle with a fine-rosed pot, and put the bell-glasses on; the latter ought to be at least ½ in. from the edge. The cuttings are best put in in rows across, beginning in the centre, and doing one half first; make a hole with a small dibber (made of Box wood is the best), insert the cutting, and fasten it in with the dibber, filling the holes up with a little dry sand prepared for that purpose; when filled the pots may be plunged half way up in a gentle bottom-heat, and the glasses taken off and wiped dry every morning. In about a month, when the cuttings begin to grow, give air by raising the glasses a little with a small piece of wood, till they are ready to be removed altogether. Watering must be attended to with care, and after the first time only give it to those that get dry over the glasses. Cuttings of the hard-wooded varieties, such as tricolor, Massoni major, &c., are best put in late in summer and early in autumn. The same care must be taken in preparing the cutting-pots, making the cuttings, &c.; they must be kept on a platform on the shady side of the propagating house, on a cold bottom, for two months, until they have callused, and they must be carefully watered and on no account in any other way except over the glasses; they may then be placed on a gentle bottom-heat, the glasses must be wiped every morning, and in about two months more they may be raised by degrees. All the hard-wooded varieties take three times as long to root as the free-growing, or what are sometimes termed the soft-wooded kinds.



Heath Cutting.

Epacrises.—These require the same treatment as the free-growing Heaths, except that the plants intended for stock must be got into a house, the temperature of which is from 55° to 60°, to induce them to make shoots for cuttings, which are best made with a knife. If a large quantity of any given sort be required, take off the cuttings from plants in the cold pits that have been cut back after flowering, and let them stand till callused on a cold bottom for two months previous to putting them in heat. I have had very good batches in this way, but the former is the quickest and most successful. H. H.

Aralia Sieboldi.—This has a handsome appearance planted singly on Grass. Several plants of it in the pleasure grounds here have a striking effect. They have a fine, bold habit of growth and handsome foliage, and where the climate allows of their standing out-of-doors permanently they form attractive objects.—J. G.

THE INDOOR GARDEN.

FUCHSIAS AS EXHIBITION PLANTS.

There is a complaint that the Fuchsia is not now the popular exhibition plant which it once was, and that the complaint is well founded there can be little doubt. Why such should be the case is not so much worth inquiry, as it is to show that a plant so easily cultivated, so graceful in its character, and so thoroughly decorative when in bloom, can be grown almost by any one. In the west of England, however, there are still grown and exhibited some of the finest specimen Fuchsias ever seen, a result that occurs not from any speciality as regards climate or position, but solely because the cultivation of the plant is well encourged, and the encouragement is responded to. Noble pyramids of leaves and flowers from 8 ft. to 10 ft. in height, perfect in form and bloom, are, indeed, objects rarely seen; but if this can be done in one part it is certain that, under similar conditions of culture, it might be done in another. I have grown Fuchsias for exhibition in past years, and, although I have not reached to the high position occupied by Mr. Lye, or the Messrs. Mould, of Devises, yet such fortune as it was possible locally to secure always followed the system of culture I adopted, which was simple, but, nevertheless, effective. I may premise my remarks as to culture by saying that our chief local show was held in the autumn, and therefore it was necessary to provide such plants as would be at their best at that time of the year. These were obtained from early, autumn-struck cuttings taken off as soon as the first bloom on old plants was over. These put in early in September in a mixture of sharp sand and loam would root and be well established in 3-in. pots by Christmas. Beyond keeping the plants in such warmth through the winter as a greenhouse would give no further pushing was attempted until March, when a shift into 4½-in. pots, and further into a gentle bottom-heat, would start the new growth for the season. A few weeks in a little heat would suffice so far as soon to need the first pinching, which should take place at every shoot as soon as bloom buds appear. The object of the grower should be to avoid unfurnished wood, and if all flowering joints are pinched out there will remain only eyes that will start renewed growth as needed. By the end of April, being then fine strong plants well furnished with a good leader and side shoots, they should be got into a cold frame or greenhouse, and there remain and kept growing on until the middle of May when the plants should be shifted at once into their blooming pots which, for that season, should be what are known as sixteens, or about 9 in. in diameter. These offer abundant root room for good plants from 4 ft. to 5 ft. in height, which height, according to the sorts grown, may be looked for. The open-air culture now commences, and this comprises the key to the system. Fuchsias grown in the open air and in the full blaze of the summer sun make less growth, but what there is is firmer and shorter jointed. Ordinarily, it would be recommended that if placed in the open air in pots the plants should be as much in the shade as possible, and this would be good advice if the pots were exposed to the action of the hot sunshine, but it is a part of this system of culture that the pots shall be plunged either in tan, ashes, Cocoa-nut fibre refuse, or leaves, care, however, being taken that each pot stands on a slate or tile to keep the worms from entering the drainage hole. When the plants have received their final shift into the blooming pots and have a well established framework for the formation of specimens, they are then plunged in some material, as mentioned, up to the rims of the pots, and in such a position as shall permit them to receive all possible amount of sunshine and air, and so far apart as to admit of being freely moved round to the sun as the growth may exhibit a tendency to draw one way. Pinching must be regularly continued all over each plant when flower buds appear, and, although the growth is necessarily slow, yet it is certain, and a robust, well-built plant is inevitable. After each pinching, a fresh leader is easily encouraged. Six weeks prior to the date of the show at which it is desired to exhibit the plants pinching should cease, and every encouragement be given to induce the plants to make a free growth. As the pots will now be full of roots, weak manure water should be given twice a week, and both foliage and bloom will show its beneficial effects. A fortnight before the show the plants may be placed in the shade or in a cool house, but a shady spot out-of-doors is the best place, and here they will attain the finest blooming condition, and be all that can be desired as pyramidal Fuchsias. It need hardly be added that such plants as these will, for summer shows the following year, make grand plants, and although it is well to keep up a succession of such young plants from year to year, yet older specimens will continue with care to be good for exhibition for several years. Sorts that are now worthy of special mention as good exhibition kinds, and that flower with great freedom and carry their blooms well when travelling, are, of red kinds, Gazelle, Warrior, Queen, Elegance, Charming, and Lizzie Hexham; of whites, Wiltshire Lass, Arabella, Beauty of Wilts, Blushing Pride, alba coccinea, and Letty Lye. These are but a few of many that are good, but they have the highest recommendation of a very successful grower and exhibitor of Fuchsias. A. D.

ANEMONE-FLOWERED CHRYSANTHEMUMS.

Anemone-flowered Chrysanthemums have an elevated disc of quilled tubes, surrounded by an outer row or fringe called guard petals. This class of Chrysanthemums is somewhat limited as regards number, but all of them are so very beautiful that it is almost impossible to have a variety that will not well repay the trouble taken in growing it. All that is necessary in a cultural point of view in reference to Anemone-flowered Chrysanthemums may be summed up in a few words: Procure cuttings as early as possible after the blooming season is over, and insert them round the edges of small pots which can be put anywhere out of the reach of wet and frost. They will be sure to strike, and in spring, when well rooted, pot them off singly, shifting them on till the blooming pot or last shift is reached, when, if ordinary attention has been given them, a splendid bloom cannot fail to be the result. For exhibition purposes the large Anemone-flowered kinds are shown singly, and the Pompones in trusses of three in a bunch. Among the most desirable large kinds are the following:—

Double Anemone-flowered Chrysanthemum (Vilmorin).

Fleur de Marie.—Pure white, rather small, but most exquisitely pure in colour. This is largely sent to Covent Garden Market, where it meets with a ready sale. Where cut bloom is required in large or small quantities this variety is absolutely indispensable. George Hock is synonymous with this kind.

Virginale.—This is also a very fine white, much like the preceding, but differing from it, inasmuch as it does not commence to bloom till the other has faded, that is, after the second week in December, and it continues in good condition throughout that month, and even well into January.

Lady Margaret.—Pure white, and a very fine large variety, with long guard petals. It is not quite so neat as the other whites named, but it is a charming flower either for the conservatory or drawing-room.

Gluck.—This is a fine yellow, somewhat early, and, whether for colour, shape, or habit, certainly unsurpassed.

Sunflower.—A fine, large, Primrose variety, somewhat late; a good flower, and, although rather pale in colour, one of the best.

Mrs. Pethers.—A fine flower, of a silvery-lilac shade, and dwarf in habit, as is also the preceding.

Prince of Anemones.—Lilac blush, with a fine disc, early, and one of the best; a very plump flower, dwarf in habit, and invariably good.

Princess Louise.—This is somewhat wanting in fulness of guard petal, but it is so early, dwarf, and full, that it should be grown where cut bloom is required.

King of Anemones.—If a dark flower be wanted, this should be grown; colour, cherry red, with lighter centre; rather tall.

Anemone Pompones rank amongst the most beautiful of flowers, being free bloomers, and affording such happy combinations of colour, that when once grown there is but small chance of their ever again being discarded. For cut bloom and conservatory decoration the following are desirable:—

Madame Montels.—Guard petals pure white, centre gold; a fine full Anemone, and one which is invaluable for cutting.

Marie Stuart.—Very delicate blush, with pale yellow centre; a chaste and exquisite variety, and one which cannot fail to be of use for decorative purposes or for bouquets.

Zobeide, Perle, and Astrea are three silvery-rose-coloured varieties, large and full, and kinds that should be grown in every collection, however small.

Antonius.—A flower with a very fine disc; and what doubly enhances its value is the fact that it emits a pleasing fragrance.

Mr. Astie.—This in all points is a most perfect flower, and one which is fine in habit.

Eugene Lanjaulet is also a very fine yellow.

Amongst dark flowers, Firefly (scarlet), Dick Turpin (magenta), and Calliope (ruby-red) are sure to recommend themselves. There are many others useful for exhibition purposes, but the foregoing are the best for furnishing cut flowers and for the decoration of the conservatory. F. T. Davis.

Plumstead Common.

CHRYSANTHEMUMS IN POTS.

In the neighbourhood in which I reside Chrysanthemums generally are the reverse of being late, and the growers for exhibition at our local show on November 20 are fearing if the mild, open weather continue the flowers will be in advance of the time when they are required, especially those plants which have been housed under glass. The plants are coming into flower with marked rapidity, even in the open air, where they can be kept much later than usual owing to the nights being soft and mild. I have a few specimens of good varieties that are in a rare healthy condition in 7-in. pots. The plants were set out-of-doors in a slightly-shaded place all the summer, and not plunged, as is usual. They were well watered and syringed, as required, and treated to occasional doses of Amies' Chemical Manure. When a dressing was given the soil was gently stirred on the surface, a little of the manure sprinkled over it, and worked into the soil when water was given. As soon as the weather promised to be dry a surfacing of what might be termed rich, juicy manure was given, piling it up round the rims of the pots, and leaving an opening round the stems of the plants for water. Since this was done the foliage of the plants has greatly improved, and the flower buds are swelling up in good style. I have not thinned out the buds to one on the point of each shoot, but have left about four to each. The plants are wanted for conservatory decoration, not for exhibition, and I cannot afford to dispense with so many blooms. Some of my plants are carrying from twenty-five to thirty-five flowers, and they will be fine objects in my cold conservatory during November. I am unwilling to introduce them yet as there are so many plants in bloom. There are Fuchsias—fulgens and Dominiana—also some of Mr. Lye's new varieties, which are extremely well adapted for conservatory decoration, because of their continuous free-flowering qualities; several zonal Pelargoniums, Abutilons—Lemoinei, Boule de Neige, rosæflorum, and vexillarium—Tuberous-rooted Begonias, Plumbago capensis, Trachelium cœruleum, and a few others. Summer is, indeed, lingering, and it is helping to pass away the dull season of the year in a very pleasant manner. D.

PELARGONIUMS THROUGHOUT THE SUMMER.

Generally speaking, the large-flowered Pelargoniums are considered to have ceased to flower by the end of July or the middle of August. The common practice is to grow a set of plants all propagated at the same time and grown on together; consequently, they come into bloom *en masse*, and when the head of flower is gone Pelargoniums are done with for the summer. I do not say that this is the universal practice, but it is a very general one. To-day (Oct.

18) I have cut some fine trusses of Triomphe de St. Mande from plants in a cold greenhouse, and if the fine, genial, sunny weather continue, other trusses of bloom will spring up to reward my labours in endeavouring to have flowers as late as possible in the season. This is easily brought about by keeping some of the autumn-struck cuttings pinched back till the first week in July, and giving them a slight shift to carry them through the autumn blooming. A few cuttings struck in May and kept growing all through the summer and winter, without allowing them to flower, come into bloom in early spring, and so from six to seven months of Pelargonium flowers is secured. This is done in a house, where autumns damp and gloomy, winters wet and cold, and early spring frosts have to be contended with. I find young plants do better for flowering in early spring than old ones cut back in August and repotted early in Sept. Triomphe de St. Mande is one of the best varieties for such work as this, because of its vigorous growth, continuous free-flowering properties, and bold trusses of bloom. The market growers say it is too vigorous and irregular in growth; but this is just the quality for a cold greenhouse. It blooms and throws out vigorous shoots at the same time, and there is never in the case of growing plants an absence of blooming wood. Of other good, free-flowering varieties, I have grown Crimson King, Rob Roy, Empress (a very pretty white), Duchess of Cambridge (bright scarlet), and Heroine (rosy-pink). I find them very valuable for cutting from, and visitors are always pleased to be able to take away a handful of flowers. Cuttings are struck with great ease almost all through the year. I put in two batches of cuttings, a few in early spring, the bulk in August. I ripen off a plant or two for the purpose, so as to have some good, matured wood at the heel of the cutting at least. These are put into small pots, three in a pot round the sides, and, as soon as they are rooted, potted off singly into 3-in. pots. While they are in these pots you can do what you like with them; either grow them on quickly into flower, or, by pinching back, lay the foundation of larger specimens to flower at a later period. A large grower of Pelargoniums for market once remarked that he cared not for his plants so long as they were in 3-in. pots and doing well. Mr. Turner would be found quite willing to admit the truth of that. Only lay the foundation of a good plant while it is in this stage of probation, and when it is shifted into a larger pot it cannot fail to develop into a handsome specimen if intelligently cultivated. D.

GROWING ORCHIDS WITHOUT HEAT.

The culture of Orchids would be no doubt much extended, and especially among amateurs, who possess a small greenhouse or conservatory, were it not for the idea which exists with the uninitiated, that they require a certain fixed temperature and special treatment not easily adopted. Such an idea is, however, a mistake, as regards, at least, some of the most useful as well as beautiful Orchids in cultivation. In the Pine-apple Nursery there is just now a houseful of Orchids, which, for health, vigour, and freedom of blossom could not easily be surpassed, and these have been grown without any fire-heat whatever since March last; and, indeed, have at no time had any more fire-heat applied to them than just sufficient to keep out frost. It is stated that by such treatment the plants make larger, stouter, and healthier bulbs than they otherwise would do, and short, thick leaves, whilst those to which fire-heat is applied systematically make long, thin leaves at the expense of the bulbs, which do not develop themselves so well, and, consequently, do not bloom so profusely. These plants, moreover, have never been syringed overhead, as this causes the tops to grow, but not the roots, which it is obvious cannot be conducive to the welfare of the plants. To insects plants thus treated are seldom subject. The following are among the kinds grown successfully under the treatment just alluded to: Odontoglossum Alexandræ, Pescatorei, niveum, cirrhosum, Andersonianum, Halli, roseum, Bictonense, Uro-Skinneri, gloriosum, and nebulosum; Oncidium macranthum, tigrinum, crispum, Forbesi, Marshallianum, varicosum, and Rogersi; all the showy kinds of Masdevallias, Indian Crocuses (Pleiones), Cymbidiums, Cœlogyne cristata, corymbosa, and barbata, and Lælia autumnalis. These and many others, could be grown well in any light, inexpensively-built house even in London, and the pleasure they would afford would be tenfold greater than that to be gained from scarlet Pelargoniums and similar plants, which usually constitute the stock in such houses, and which entail quite as much or, perhaps, more trouble and expense in their cultivation than the Orchids just named. C. W. S.

Paraffin Oil an Insecticide.—I have lately heard good accounts of the value of this oil for destroying insects. Several years ago an experienced cultivator told me that paraffin oil applied in the manner described by your correspondents was his remedy for green or black fly.—J. G.

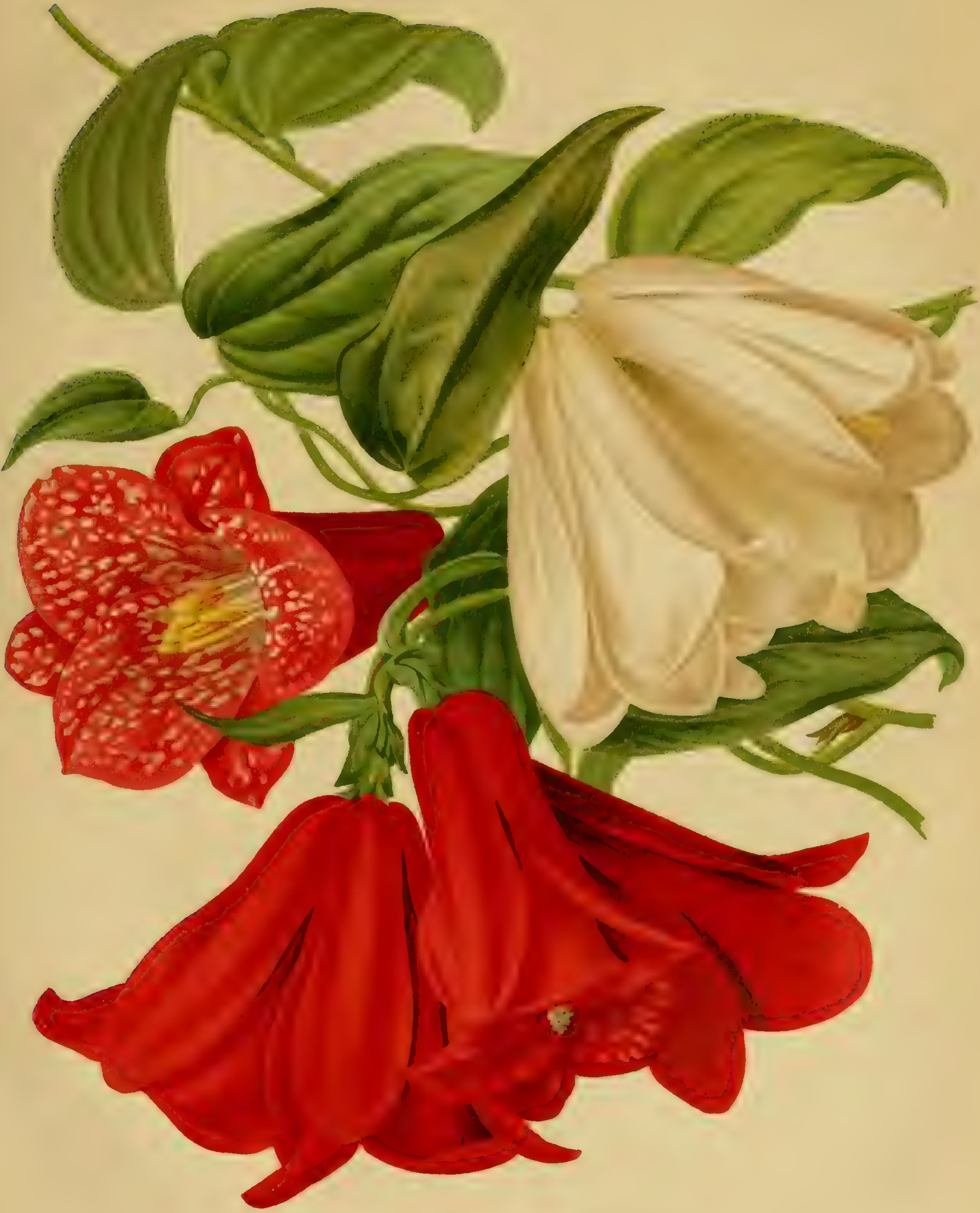
PLATE CLI.

VARIETIES OF LAPAGERIA ROSEA.

The history of the beautiful genus Lapageria is not without interest, independently of the value of its members as ornamental plants. Few persons, probably, are aware of the origin of the name Lapageria, given by Ruiz and Pavon as long ago as 1802. The genus was described by the botanists mentioned in the third volume of their "Flora Peruviana et Chilensis," and dedicated to Josephine Beauharnaise de Lapageria, first wife of Napoleon I., and a great patroness of botany and natural history. Only the rose, or rose and crimson, variety was known to them, and in their figure (plate 297) they show the spotted interior of a flower similar to that to the left of the centre of our plate. According to the same authors, this variety was common in the neighbourhood of Conception, where its roots were employed for the same purposes as Sarsaparilla. The fruit, which is occasionally produced in abundance in this country, is a pulpy berry of a delicious flavour, highly esteemed by the aborigines of Chili. Almost every botanist and plant collector who has since visited the country has naturally dried specimens of so showy a plant, and it appears to be common throughout the coast region of the province of Araucan, from Conception to Valdivia. Gay, in his "Flora Chilena," expressly states that it grows in the vicinity of the sea, and that it prefers a humid, somewhat shady, situation. This is fully borne out by our experience of the plant in this country, as it nowhere succeeds better than out-of-doors in the south-west of England and Ireland. Contrary to what is the case with many plants, the Lapageria produces flowers in a wild state as large or larger than when under cultivation. Dried specimens collected by Mr. Reed have flowers 3½ in. long. Living plants of the ordinary L. rosea were sent to Kew in 1847 by an American gentleman named Wheelright, and the following year Messrs. Veitch received a consignment of it through their collector, Mr. Thomas Lobb. The Kew plants did not flourish, and although Messrs. Veitch's plants grew well, they did not flower for some time; but in 1849 a coloured plate appeared in the "Botanical Magazine" which was prepared from dried specimens and Lobb's coloured sketch of the flowers made in Chili. In 1850, however, it is recorded that it flowered in several gardens in this country. L. alba was originally sent from Chili to the Botanic Garden of Paris by a Mr. Labadie in 1851, and it flowered there the following year, and was described and figured by Prof. Decaisne in the "Revue Horticole." The varieties named superba, rubra, &c., are the fruits of subsequent importations or improved seedling varieties raised in this country. It should be mentioned, too, that there is considerable difference in the so-called white varieties, some of them being more or less tinged with pink, as were those figured in the "Revue Horticole" and "Botanical Magazine." W. B. Hemsley.

FLOWERING OF THE LAPAGERIA.

It has been stated that a floriferous habit in this splendid greenhouse climber depends upon the variety, which is no doubt true to some extent; but much more depends upon situation and culture, as I think the following experience will prove. When I came here, now a number of years ago, I found a pretty old, but not large, plant of L. rosea growing in a 12-in. pot in a cool conservatory. It had not flowered freely, I was told, but it was desired that it should be kept in the pot for a particular reason, and so I allowed it to remain, shifting it occasionally or top-dressing it as required. The plant continued to flower in an intermittent way throughout the year, but not profusely. At last I determined to plant it out against the back wall of a Camellia house in a moderately shady situation, and had a trellis attached to the wall to train it to. Here it grew with astonishing vigour each summer, producing shoots from the bottom as thick as moderately strong pot Vines and more than 12 ft. long; but still it did not flower so freely as was expected, though what flowers it did produce were fine. At the end of two or three years, I forget which, I determined to transfer the plant to another house, a span-roofed one, where it would receive plenty of light and air, the two things necessary to the perfect ripening of the



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wood. This was in January, 1876. With much labour the plant was untwisted from the wires and taken up with a heavy ball of fine roots and planted out in a prepared bed of loam, leaf-mould, peat, and sand loam predominating. The shoots were trained in a systematic way to wires stretched about 9 in. from the glass, and no shade was given during the summer, the house being kept cool and airy, and only the frost excluded in winter. In August of the same year the plant began to flower profusely, and continued to do so till November. For a long while 200 flowers, not to mention buds, could be counted upon it at one time. I sent examples of trusses and wreaths of it to Messrs. Veitch for their opinion as to the variety and its free-flowering habit, and they pronounced it to be very fine indeed. This season the plant has not made so much growth, and I begin to be afraid it has been partially weakened through flowering so much last autumn; still, it has flowered well, and is now blooming just about as well as it did last year. It began to flower in August again freely, and has at the present time 150 flowers upon it, besides buds. I counted at one time seven or eight trusses of fives and sixes, and plenty of threes and fours. In two cases two trusses of sixes were produced from two terminal buds close together, making clusters of twelve. I imagine clusters of twelve from one bud are not common, if such have been recorded. The production of clusters is a matter of pinching the shoots at the right time. I noticed that particularly last season, and pinched, in consequence, rather perseveringly during the past season, hence the number of clusters, of which we have more than single flowers. All the clusters, without exception, are produced from terminal buds where the shoots were pinched, and I think I may say this treatment will produce them unfailingly if the plant be otherwise well treated. I do not say, however, that clusters are desirable; I would rather have the flowers come singly at every joint. Last year we had wreaths of eight and nine flowers from as many buds, each about one or two inches apart, and I found these very useful on some important occasions for decorating tall vases that required to be draped with drooping flowers. I am sorry to say that a fine young plant of L. alba which was planted in the same bed at the same time as the other, in fact close beside it, with the object of mixing the two together, has this season died down to the root in an unaccountable manner. The shoots perished from the top downwards, and the other day I took out the root quite dead. The plant flowered well last autumn. I can only explain its dying from the fact that the sun shone rather strongly in at the gable end of the span-roofed house upon the plant, and killed it by sun-stroke. Although I had the glass thickly whitewashed as soon as the first injured leaves were observed, the foliage and shoots continued to wither and die. In other respects both plants were treated alike; only L. rosea has no foliage exposed to the gable of the house, and consequently does not receive the sun's rays so directly. Have any of your readers noticed a similar case? J. S.

Wortley.

A Good Winter-flowering Plant.—Tydæa Robert le Diable is not only the most showy and best in its class, but it also ranks amongst the best of plants which afford a good display of blossom in winter. I lately saw some well-grown plants of it in the Pine-apple Nursery; they were growing in 8-in. pots in soil consisting of loam and cow manure. Each pot was furnished with five or six vigorous plants, having large healthy leaves and a profusion of flower-buds, which will continue to open in succession for several months to come. Such plants are equally valuable for their easy culture, and for the display which they give at a season of the year when flowers are most esteemed.—S.

Impatiens Jerdoniæ.—When grown in a cool house near the glass, this old, but comparatively little cultivated, plant makes one of the most attractive objects for the conservatory at this season of the year. If grown in 5-in. or 6-in. pots it forms compact, bushy, little plants with bronzy-green leaves and bright scarlet and orange blossoms, which are very useful for the ornamentation of small vases, or for the front row on the conservatory stage. Such plants also look well when placed from six to ten together in pans among Club Mosses. Numerous plants of it now may be seen in flower in several of the London nurseries.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Anguloas.—Orchids of this class are not so extensively grown as they deserve to be; why, it is difficult to say, as the large size and totally distinct character of their flowers at once commend them to the notice of Orchid growers. Amongst them there is nothing that approaches the yellow-flowered A. Clowesi, whilst A. eburnea, A. virginalis, and A. Ruckeri are fitting companions to it. Where these Anguloas are grown it often happens that they do not possess the strength and vigour which they easily attain where their treatment is favourable to their full development. The most frequent cause of a deficiency in strength may generally be traced to their being grown in too high a temperature. Under such circumstances, and a deficiency of light, they keep on lingering without acquiring the power to produce more than half the number of blooms of which they are capable where the treatment to which they are subjected is more favourable to their natural requirements. The best I have ever had or seen were grown in a temperature some 6° or 8° higher than that of an ordinary greenhouse, but in speaking thus of these plants, and almost all other Orchids, it is necessary for the inexperienced to bear in mind that, with very few exceptions, those that in a state of cultivation succeed best with comparatively little artificial heat, as thus described, must not be submitted to anything like the full volume of air, and consequently dry state of the atmosphere, that exists in an ordinary greenhouse, where the lights—top and sides—are, for a great portion of the day in mild weather, thrown wide open, for wherever, through an absence of knowledge of the real requirements of the plants, such a course is followed, it is sure to end in failure. Anguloas are also plants that appear to thrive best with considerably more root moisture than the majority of Orchids require. Whilst on this subject of water to the roots I would recommend all beginners in the cultivation of Orchids to diligently study the moisture requirements of the various families and species of plants which they grow. This is a matter of primary importance. There is often too great a disposition to generalise by speaking of East Indian plants, intermediate heat-requiring kinds, and the still cooler sorts, as if the whole of the plants in each of these divisions required to be treated alike, or nearly so, in the matter of water. To this more than to anything else may be traced the want of success which even many extensive growers experience through giving too much or too little, as the case may be, to many of the plants which they attempt to cultivate. In proof of this I may remark that in many of the most noted collections of Orchids it will be found that one or other section of the plants succeed in a way that leaves nothing to be desired, whilst the others are a comparative failure; and I have no hesitation in saying that the want of a full realisation of the different requirements of the plants in this matter of water to the roots is one of the primary causes of such a state of things. Where these Anguloas are subjected to the treatment above indicated, they will be found to succeed and add a charm to any collection of these most attractive plants, in which diversity of form and colour is one of the most important considerations.

Lycaste Skinneri.—This is even a more useful plant than the foregoing, from the fact of its blooming over a lengthened period, the flowers lasting long, and coming in not only through the spring, but during the winter, when there is a comparative scarcity of bloom. A few more degrees of heat than are required by the Anguloas will answer for this Lycaste, such as placing the plants at the warmest end of the house. Yet it will also be found to succeed better with less heat than that to which it is often subjected. It is a species that I should recommend those forming collections to have plenty of, being little liable to disease. Imported plants of it, too, possess such variety that scarcely two will be found alike, from the deep rosy-coloured L. Skinneri atrorubens to the pure white L. S. alba. If placed when in flower in an atmosphere where there is not so much humidity as will spot the blooms by condensation upon them, they will last for six or eight weeks. Although it requires a much moister condition of the soil whilst in active growth than many Orchids, it will from this time forward, when growth is nearly completed, necessarily need drier treatment.

Barkerias.—Like most other Orchids, the completion of growth with these in a great measure depends upon the time when they were started. In most cases their leaves and pseudo-bulbs will be about attaining their full size, but until that is the case water must not be quite withheld, for, grown as they generally are on blocks suspended from the roof, or in pots filled with the lightest material, they will bear keeping somewhat moister than the majority of Orchids without being subjected to the injurious influence of making second growth. The most satisfactory kinds are B. spectabilis, B. Skinneri, and B. elegans, for though these plants are of comparatively small growth, and seldom find a place in the large collections met with on exhibition tables, they are most desirable subjects.

Brassavolas.—These comparatively small-growing plants will now be about finishing their season's growth. The yellow-flowered B. glauca generally does better with cooler treatment than most of the other kinds. If cultivated in too high a temperature it rarely flowers freely or at all. The singular and large generally solitary-flowered B. Digbyana, B. cordata, B. nodosa, B. lineata, and B. grandiflora are also well worth growing.

Camarotis purpurea.—This is another small-growing subject, which succeeds best on a block. Its miniature Saccolabium-like spikes produced freely in the spring, combined with the little space which the plant occupies, render it deserving of better treatment than it generally receives from those who confine their collections largely to species that are popular for the time being. It will yet be making growth, and should be watered regularly. It will succeed best at the coolest end of the East Indian house.

Cymbidiums.—Though a rather extensive family, some are so much more attractive than others as to make the more inferior varieties of little importance. Amongst those holding a first place are the ivory-white C. eburneum and the somewhat less esteemed C. Mastersi; these, likewise, will now be about completing their growth, and should gradually receive less water.

General Treatment.—Everything possible should be done to place the many species that have yet considerable growth to make under the best conditions as to light, giving less moisture especially in the atmosphere, than hitherto. Its influence in promoting extension of leaf surface at the expense of solidity in texture is much greater now than during bright weather. Then the sun's heat not only quickly dries up the vapour given off from troughed pipes and the moistened surfaces of paths and stages, but it also has a direct influence in solidfying the tissues of the leaves and pseudo-bulbs as they extend. Take, therefore, every opportunity when the weather is favourable to give air for a time each day in a way that will not only tend to the requisite drying and sweetening of the atmosphere, but so as to effect a complete displacement of the effete, pent-up air, replacing it with that which is fresh and not exhausted.—T. Baines.

Poinsettias.—In order to assist these to push large and brilliant floral leaves, and to obtain them of stout, firm texture for cutting or other decorative purposes, the plants should now be placed in gentle bottom-heat, with their heads as close to the glass as possible without actually touching it. Should they, however, be required for removal to assist in furnishing the conservatory, it will be better to avoid the bottom-heat, as they retain their lower leaves much fresher, and are far more enduring when they have to remain in a low temperature. Liquid manure, if used in a tepid state (by the addition of warm water), will now be of the greatest assistance in increasing the size of the flower-heads, and imparting a brighter and richer colour to them.

Eucharis amazonica, always so valuable for cutting, is doubly so during the dull months of winter, when its pure white flowers show up in such pleasing contrast with the beautiful Euphorbia jacquiniæflora, and the rich, glowing scarlet of the Poinsettia. In order to have it successfully in bloom at the present time, it is necessary that a portion of the stock should have been rested by having been placed in a cooler temperature without bottom-heat, with only just sufficient water at the roots to keep the leaves in a fresh, green state. If this mode of treatment have been carried out for the requisite period, there will be no difficulty in inducing them to flower if at once placed in brisk bottom-heat, and well supplied with water at the roots. If the drainage be free and open, and the soil in the same condition, there need be no fear of over-saturating them with water, as they will take and enjoy more than most plants, especially after they have been a week or two in strong heat, and their roots thereby urged into a state of activity. Before starting them see that they are entirely free from bug, and give the leaves a thorough sponging to clear them of any dust or deposit of any kind that may have collected on them. Eucharis have a special liking for being watered overhead as well as at the roots; and, therefore, if the atmosphere in which they are placed be at all dry, they should be frequently syringed, always using clear warm water for the purpose. Any that have ceased blooming, and have become thick and crowded with bulbs, should be shaken out and divided, and the small and medium-sized plants laid aside to grow on by themselves, while the largest and best should be potted in large pots, putting from twelve to eighteen bulbs in each, according to the sizes used.

Euphorbia jacquiniæflora, than which a more charming or useful winter-flowering stove plant does not exist, should now have every attention paid it to make the growth firm and mature, without which they never flower in a satisfactory manner. Where they are required for cutting it is a good plan to place them along the front of a cool stove, with their heads kept down by straining a few pieces of twine under the rafter, by which means the whole of the stems of the plant will then be within a few inches of the glass, in which position they will derive full benefit of all the light it is possible for them to receive at this season. Flowers that are produced under such favourable conditions last in a cut state nearly twice as long as those that are allowed to expand far away from the light and air, and where they have to endure the same amount of heat and moisture necessary for the general stock.

Greenhouse Plants.—All soft-wooded greenhouse plants are now liable to damp; the atmosphere of the house, therefore, which they occupy must be kept as dry as possible, and well ventilated. In wet weather a little fire-heat, with ventilation at the same time, may also be used. Pick off every damping leaf or portion of leaf; and should a shoot be damped through, cut it off under the diseased spot, and rub the incision with powdered charcoal. Allow no fallen leaves to remain lying about the house, as they are sure to generate damp, and will certainly communicate it to any plant coming in contact with them.

Heliotropes that have been kept in pots during the summer for early blooming should now be placed on shelves close up to the glass, so that they may receive all the sun and light possible, or be put in a dry, warm pit, where they can enjoy the same advantages. For late blooming, plants taken up from the flower garden, cut back, and potted in small pots, and afterwards placed in heat to grow them on again, make fine plants by March or April, when they are most useful for cutting or conservatory decoration, for either of which purpose they are always highly prized.

Mignonette that has been grown in pots for flowering through the winter, and also that which was sown later to come in during the spring, and which has been placed in the open air, will now need protection. As it is no longer safe from frost out-of-doors, it should be removed to frames, where it will be secure for some weeks to come, as we have not usually more frost before Christmas than can be kept out with an ordinary covering of mats. For all such purposes the frames should stand on a good bed of ashes, in as dry a condition as can be had, which will tend in some measure to counteract the effects of the damp state of the atmosphere from which we generally suffer in the last months of the year. Place the frames in the lightest situation available, and let the plants stand on inverted pots sufficiently large to raise the tops close up to the glass, by which means they will be in a position to admit of a free circulation of air amongst them as well as to receive all the light possible. Take the light completely off during the whole of each day when there is no rain, and tilt them back and front when it is wet, the object being to keep the growth now made as stout and compact as possible, upon which in a great measure will depend the quantity and quality of the flowers which the plants will produce. There is a double advantage in keeping Mignonette in frames through the autumn as late as it can be done without suffering from cold or damp, inasmuch as treated in that way it is less liable to get drawn up weakly than in a greenhouse, and it prevents houses from getting so much crowded as they otherwise would be. Do not over-water; at the same time the plants must not be allowed to get over-dry; give liquid manure with a little soot in it every other time water is required; the soot will give a deep green colour to the leaves in place of the yellow, sickly hue so often seen in the case of Mignonette grown in pots. Above all avoid having too many plants in a pot, or a weakly condition, with little flower, is certain to be the result; two, or at most three, are enough for a 6-in. pot.

Flower Garden.

Pelargoniums, Calceolarias, and Verbenas.—Where it is not intended to preserve the plants, they may be allowed to retain their position in the beds as long as they remain attractive. Some of the winter and spring-flowering bedding plants, such as Aubrietias and the Forget-me-nots, which are already showing flower, will be in proper condition to take the place of the summer bedders as soon as the latter are removed. The two systems, *i.e.*, spring and summer bedding, may therefore thus be made to unite with each other, and in that way prevent the flower garden ever being entirely devoid of flowering plants. All bedding plants intended to be preserved should now be in a place of safety, and will, together with rooted and partially-rooted cuttings, require to be frequently attended to in the way of removing all decaying leaves. Water should be given sparingly at present, as about this time damp is more to be dreaded than frost. A glass roof will, probably for some time to come, be sufficient protection against frost, and an occasional brisk fire during fine days, when abundance of air can be given freely at the same time, will be found to be beneficial in warding off damp. Most of the many varieties of Fuchsias form very ornamental and permanent flower beds, more particularly the white-corolla'd varieties of the Madame Cornellissen type. When planted out in the open air they may generally be treated as ordinary hardy herbaceous plants, or during very severe winters the surface of the beds containing them may be mulched with a slight covering of cinder ashes, old tan, or sawdust. The Cineraria maritima is also an exceedingly useful hardy bedding plant; as a white or silver-foliaged marginal plant it is, perhaps, unsurpassed, and will last for any number of years; indeed, the older the plants the more white the foliage becomes. It requires no protection during ordinary winters, but should not be cut down until about the beginning of May, when it will be found to be breaking close to the surface of the soil; after being cut close down it will immediately break into growth and become at once effective. It is of the greatest value in ribbon bordering, contrasting, as it does, agreeably with the Perilla, or, better still, with Dell's dark-leaved bedding Beet. For this purpose it is generally to be preferred, as a silver-leaved plant, to the Centaurea, as it can be cut or pinched in with impunity.

Hardy Fruit.

At this season it is usual, though the practice is not universally adopted, to loosen or unnail Peach and Nectarine trees from the walls, the theory, which is no doubt a correct one, being that such a proceeding assists in keeping the buds longer in a dormant state, thus retarding growth in the spring, as, of course, the later the trees are in flowering the greater is the probability of their having favourable weather. Our spring season is so treacherous, and the fruit crops depend so much on the character of the weather when the trees are in flower, that any method that will successfully retard the blooming period is worth adopting, regardless of labour. When unnailing, see that the main branches are securely fastened to prevent rocking or wind-waving.

Kitchen Garden.

Cauliflowers and Broccoli.—One of the best vegetables for this time of the year is Veitch's Autumn Giant Cauliflower. It is not only excellent in quality, but the plant, being robust, produces a great weight of crop upon a given space. The heads are compact, white, and remarkably tender, even when they have attained a large size. It thrives well in almost any soil, without the assistance of so much manure as is required by some sorts. Where sowings were made at two or three different times, the first will have been fit for use some time back, and the successional sowings will furnish a supply almost to the end of the year, but to ensure this the crop will require some attention. In this variety the leaves do not turn inwards to protect the heads in the least; on the contrary, they leave them fully exposed to the weather. For this reason it has not found favour with some growers, but we find it very easy to supply this want by drawing the leaves together and tying them round with a piece of bast. This should be done when the plants are dry and as soon as the heads begin to form. They should not be tied so tightly as to injure the leaves or exclude air and light, otherwise they become blanched and decay. By using the means just recorded, the heads will escape unscathed from the effects of 8° or 10° of frost. Later in the autumn, when an open shed, in which there is a fair amount of light and air, is to spare, some ordinary soil may be put into it, and a number of plants, the heads of which have attained a usable size, may be placed in the soil, but not too thickly, or the leaves will turn yellow and injure the heads. If this be done in succession as the plants form heads, there will be in hand a supply of Cauliflowers to fall back upon should severe weather set in early. Frames or pits are of course better than a shed in which to keep them, but these are generally required for other purposes. The practice of taking up Cauliflower or Broccoli in autumn when nearly fit for use, and hanging them head downwards in a shed or other building, is not good, for, although they will keep for a time in that way, they get tough and inferior compared with such as have had their roots in moist soil. The later crops of Broccoli that are intended to come in during winter and spring, should at once be laid in order to prepare them for enduring severe frost. The object in laying Broccoli is twofold—First, to check growth; disturbing a considerable portion of the roots naturally has the effect of hardening and solidifying the whole plant, and of enabling it better to withstand severe weather. Secondly, to place the plants in such a position that the sun, during alternate frost and thaw, will not get to the hearts, as these suffer more from frost in the night after being thawed by the sun in the day than when continuously frozen. For this reason the heads should always be laid so as to face the north or west. To accomplish this, if the rows run east and west, commence on the north side of the first row, and take out a spit of soil just the width of the spade, so as to form a trench within 2 in. or 3 in. of the stems of the plants, laying the soil, as the work proceeds, on the side away from the row. This will necessarily remove it from the roots, no more of which should be broken off than can be avoided. All the plants in the row should then be regularly bent over, until their heads rest on the ridge of soil taken out of the trench. When this is done, commence with the next row, taking the soil out so as to form a similar trench, and laying it in a ridge upon the stems of the row of plants bent over, so as to cover them right up to their bottom leaves; and, in this way, proceed until the whole is completed. If the rows stand north and south, the work must be begun on the west side. By this process, as will be seen, all the roots on one side of each row, and a portion of those on the other, are considerably disturbed. This will cause the leaves to flag a good deal for a week or two, which has the desired effect in checking growth. The more vigorous and large the plants, the greater is the necessity for thus preparing them for winter. In light soils, where they can be got up without much mutilation of the roots, should it be desirable to get the ground ready for some other crop before the Broccoli is off in spring, they may be taken up altogether and laid in some more convenient place, lifting them, as far as possible, with all their roots intact. Where Broccoli is properly managed in this way, it is only during exceptionally severe winters that it gets destroyed, and the drier the land is the more frost the plants will bear without injury. The length of time during which this vegetable affords a succession, at a period of the year when there does not exist much variety, makes it worth while to do all that is possible to preserve it.

Turnips, Carrots, and Onions.—Late crops of Turnips should be gone over and handweeded, as Chickweed, Groundsel, and other annuals will continue to grow and seed, if not removed. It is now of little use to hoe such weeds up and leave them, as they take fresh root directly, through the insufficiency of solar heat to kill them. Autumn-sown Carrots, to stand the winter for spring use, should also be kept clear of weeds, and thinned out sufficiently to allow them room to grow; as they will be used whilst small, 4 in. or 5 in. apart in the rows will be sufficient. Tripoli Onions may now be planted, and should be lifted with a trowel or small fork, so as to preserve all the roots unhurt, and this cannot be accomplished if they are pulled up. They ought to be planted with a dibber, in rows 14 in. apart, a distance of 3 in. being left between the plants in the rows; this will allow for losses in the winter, but, should all live, they can be thinned out in the spring, so as to leave them 9 in. asunder. Care should be taken not to put them in too deep; the roots and the base of the plants should be just covered, so that they may be held in an upright position. If the weather be dry give them a moderate watering at the time of planting. These transplanted Onions are less liable to injury in a severe winter than those that are permitted to remain where they were sown; they also often make finer bulbs. They are much esteemed for cooking purposes, on account of their mild flavour, and the larger they are grown the better they are in this respect; consequently, a good piece of ground should be selected, which must be deeply dug and well broken, plenty of manure being added. All these operations should, so far as possible, be carried out when the soil is dry, for treading upon it when in a wet state does much injury. Continue to thin out winter Spinach; if the thinnings cannot be used as fast as the crops require more space, the plants that are drawn out should be consigned to the rubbish heap, as overcrowding thus late in the season will prevent those that are to remain attaining a condition to enable them to survive severe weather. The principal crops of Celery for winter use should now have the earthing-up process completed, drawing the soil well up to the leaves, so as to form at top a sharp ridge, by which means water will be thrown off. In damp situations it is no uncommon occurrence during wet weather to see water standing in the spaces between the rows; means should always be taken to admit of its running off, otherwise it is almost certain to cause the crop to rot. Late Potatoes have suffered from disease, and should be carefully looked over two or three times in the course of a few weeks, so as to remove those that are affected. Late-sown Turnips have grown very fast; the wet has also had the effect of causing the tops to grow larger than usual, and if at all crowded, these will interfere with the roots increasing in size as they ought to do; as they will yet grow considerably if space be allowed them, more should be thinned out.

Extracts from my Diary.

October 28.—Sowing Mustard and Cress in boxes placed in heat. Potting off Sweet Basil into 6-in. pots, and placing them in a warm house to give a supply during the winter; also potting Tomato cuttings to grow on for early fruiting. Putting a good coat of long litter round the shoots of Globe Artichokes. Clearing off old Rhubarb and Seakale leaves and manuring the ground. Filling pit with manure and leaves that had previously been well prepared for top

Vines. Getting a little Chicory and Dandelion into the Mushroom house to blanch.

Oct. 29.—Potting a batch of late Primulas and Cinerarias. Removing Pelargoniums from cold frames into Vineries. Nailing up Ivy, Roses, and other climbers on walls to prevent them being injured by wind, and to give them an orderly appearance. Turning over a large heap of manure, and adding 20 lb. of salt and 1 bushel of soot to the cartload. Putting some new stakes to young trees.

Oct. 30.—Removing Cinerarias and Primulas from cold pits to warmer quarters. Stirring the soil among Spinach, Endive, Lettuce, Cabbage, and Cauliflower plants. Cutting for use Veitch's new Autumn Self-protecting Broccoli in fine condition. Mowing, cleaning up leaves, and rolling gravel walks.

Oct 31.—Taking up August-sown Cabbage plants, and planting borders with the small plants, placing them 6 in. apart, for spring planting. Turning a large heap of leaves and manure for making hotbeds, and covering up Seakale and Rhubarb. Earthing up late Celery when the soil is dry and in workable condition. Getting manure on the ground whilst it is dry.

November 1.—Sowing French Beans in pots and placing them in heat. Covering up Endive, and tying up Lettuces to blanch. Clearing out Melon frames, and preparing them for wintering Endive and Lettuce. Cleaning leaves off the walks, and getting them all rolled down. Giving Leeks and Cardoons a final earthing up. Looking over the Cauliflowers, and turning down leaves where required, and placing some of the forward ones in an open shed.

Nov. 2.—Potting Lily of the Valley for forcing. Planting Daisies, Wallflowers, and Myosotis. Getting up Dahlia roots, and storing them away in a dry room. Clearing away Scarlet Runners, and storing away the best of the sticks for the earliest crop another year. Spawning Mushroom bed and covering it with mould. Watering the Pines all through that require it. Fruit in use for dessert—Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

THE FRUIT GARDEN.

APPLES AND PEARS FOR NORTHERN DISTRICTS.

It is a well-known fact, as is evidenced by the reports of the fruit crops annually given in The Garden, that intending planters cannot be too careful in selecting such varieties of fruit trees as are known to succeed best in their own particular locality. More especially is this the case in districts where the climate is peculiarly capricious, as it is in Lancashire, where the more tender class of hardy fruits do not grow well, and sometimes do not even survive the effects of a severe winter. Apples and Pears are, however, so numerous and rich as regards varieties, that by making a judicious selection of them ample supplies of culinary and dessert fruits may be secured. During the last three seasons one disaster or another has marred the prospect of a well-stocked fruit room. In the years 1876-77 the blossoms were frozen to death, and this year the crops of Pears and Apples, though not, generally speaking, abundant, were in many localities fair average crops; but what escaped the frost last spring were destined to meet a worse fate. During the recent equinoctial gales, it was sad to see really fair crops strewn hither and thither in all directions, and that, too, within a few days of their being ready to be harvested. Bush-fruit culture seems to afford the only remedy for such disasters; or perhaps a more general adoption of the dwarf pyramid system of growth would yield the most profitable returns. It is obvious, from recent experience, that where it is possible to introduce various systems of fruit culture the opportunity should be at once embraced.

Arches of fruit trees, for instance, would be suitable in some parts of most gardens. Then there is the horizontal and oblique cordon planted in narrow borders where root extension is in some degree proportionate to the progress made by the branches or spurs, which, of course, are restricted to space; and there is also the espalier mode of training, which has been recommended in The Garden a short time ago. Before forming plantations of young fruit trees it is a good plan to keep them in a small nursery for twelve months. The roots sometimes suffer in transit; and although they look none the worse for the time being, yet the progress made by the trees may not turn out satisfactory the first season. This plan also affords an opportunity of weeding out all cankered trees or discarding old varieties. Apple and Pear trees are now so cheap, that a small nursery full of them would cost but little; and the possession of them would enable one to weed out the old trees about the place by degrees. In other words, operations of this character should be anticipated by having young trees in a fruit-bearing state before the old ones are discarded. They need occupy but little room, and by being replanted annually they can be kept fit for removal whenever they are required. I have seen a very large garden restocked in this way without the supply of fruit ever being cut off. There is one other point in hardy fruit culture of paramount importance, and that is, shelter. This I have seen exemplified in a remarkable manner a few days ago when visiting a neighbour's garden. It is walled in all round, and its position is such that destructive winds sweep over the tops of the trees without injuring the crops in the smallest degree. The soil is, of course, thoroughly drained; and the consequence is, that failure as regards hardy fruits is almost unknown. Even Coe's Golden Drop Plum bears freely on a north wall in close proximity to Marie Louise Pears, which also do well on moderate-sized standards in the same garden.

The following selection of Apples and Pears is suitable for Lancashire and the north of England generally, viz.:—

Apples (*Culinary*).—Alfriston, Cox's Pomona, Dumelow's Seedling or Wellington, Hawthornden (new), Dutch Codlin, Emperor Alexander, Galloway Pippin, Lord Suffield (indispensable), Northern Greening, Stirling Castle, Tower of Glamis, and Yorkshire Greening. *Dessert.*—Oslin Pippin, Eve, Ribston Pippin, Blenheim Orange, Cellini (a great cropper), King of the Pippins, and American Mother.

Pears.—Doyenné d'Eté (July and August), Citron des Carmes (August), Aston Town, Marie Louise, Louise Bonne of Jersey, Beurré Clairgeau, Chaumontel, Duchesse d'Angoulême, Napoleon, Passe Colmar, Beurré d'Aremberg, Easter Beurré, Beurré Diel, Beurré Rance, Hacon's Incomparable, and Ne Plus Meuris. W. Hinds.

Otterspool.

NOTES ON APPLES.

As is the case with most other fruits, we have far too many kinds of Apples, and hence the question so frequently asked, "What is the name of this or that variety?" The following illustrations may, therefore, not only assist owners of nameless sorts to recognise them, but also prove a guide as regards selecting the best kinds.

Calville Rouge d'Automne (fig. 1) is one of the best of kitchen Apples, having a reddish-white flesh, which never fails to cook well. It is too large for a table fruit, otherwise it is equally well adapted for dessert. It is very handsome, having a bright red skin somewhat yellow streaked with red on the shaded side. The tree has a vigorous constitution, and is a free bearer.

Gravenstein (fig. 2) is a well-known Apple, though not so generally grown as it should be. It is classed, as a rule, amongst kitchen Apples, but it is also one of those kinds that answer equally well for dessert, being both handsome and fine in quality. The skin is perfectly smooth, and in colour a pale yellow streaked with red, and when fully ripe bright yellow and crimson. It generally ripens during November, but I have known it to be good at Christmas.

Reinette Franche (fig. 3) is one of the handsomest, as well as one of the best, of dessert Apples, and one which keeps as long as Cox's Orange Pippin or Court Pendu Plât. Its skin is pale yellow dotted with russet, and the flesh is at once tender and crisp, with a strong aromatic flavour. The tree has an excellent constitution, and is a profuse bearer. It is worthy of a first place amongst dessert kinds.

Calville Rouge d'Hiver (fig. 4) is a large red kitchen Apple, having a deep bloom, which gives it a rich appearance. The tree is an excellent bearer, but its fruit is not so good in quality as that of many others, and it has also the undesirable quality of retaining the red tinge of flesh when cooked. It ripens in November, and will not keep long after that time.

Calville Blanche (fig. 5).—To my mind this is one of the most beautiful of all Apples, and certainly one which when cooked has the most delicious, as well as the whitest, flesh imaginable. It is not nearly so largely grown in this country as it is in France, and no other Apple is in such demand or fetches so large a price in the Paris markets. The illustration faithfully represents its shape. It has a smooth, pale yellow skin, and is deeply ribbed, especially near the apex. The tree is a free grower and bearer, and the fruit will keep well till February or March. It is an Apple which should be in every collection.

Reinette de Canada (fig. 6) is one of the largest of all kitchen Apples. It was shown in nearly all the collections at the Paris Exhibition, which opened on the 1st of this month, and was by far the finest-looking Apple there. The skin is greenish-yellow, strewn with russet, and sometimes quite covered with it. The flesh is of the finest quality for kitchen purposes, but second-rate for dessert. It will keep in good condition till March. The tree makes a handsome pyramid, and is an excellent bearer in most seasons. W. W. H.

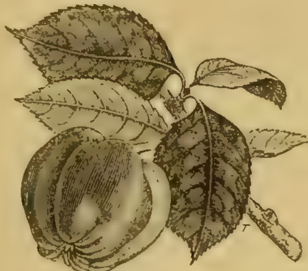


Fig. 1.—Calville Rouge d'Automne.

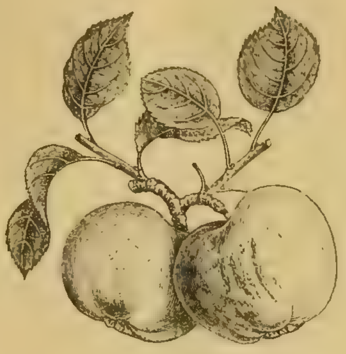


Fig. 2.—Gravenstein.

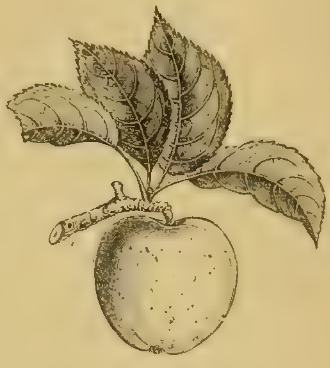


Fig. 3.—Reinette Franche.

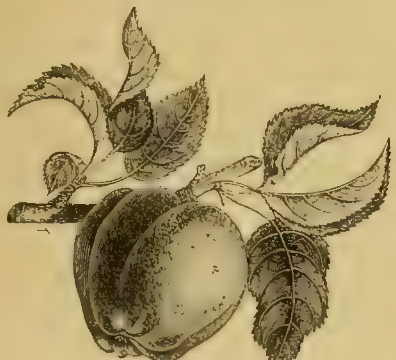


Fig. 4.—Calville Rouge d'Hiver.

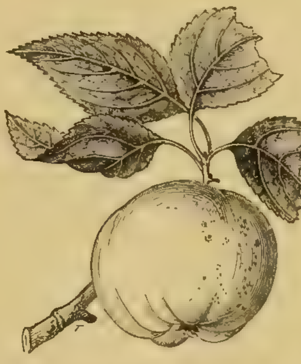


Fig. 5.—Calville Blanche.

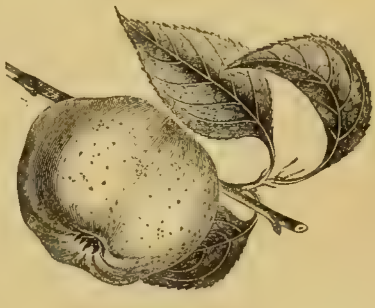


Fig. 6.—Reinette de Canada.

EXPERIMENTS IN PEACH CULTURE.

With those who seek information on the subject of Peach culture, the question asked in almost every case is, If I plant young trees now when shall I have fruit?—which question might be answered thus: It entirely depends upon the mode of training adopted. If you adopt the plan almost invariably recommended in standard works on English gardening, you will have crops in four or five years; but if you disregard such instructions, and train your trees in a natural way, you may have crops in less than half that time, or, in other words, the first year after planting. Our opinion is, that the culture of the Peach in this country is yet in its infancy. As a tree it is quite as rapid a grower as the Vine, and as willing a bearer if it is only trained in a rational manner, and not cut down almost as fast as it grows, as has been the practice hitherto, except in a few instances here and there. We have before alluded to this matter, and now propose to state some recent experiences on the subject of training, which may perhaps help to show that the training of the Peach—and, indeed, all stone fruits—is a far more simple affair than it is generally made to appear, and that it is quite an easy matter to have both large trees and crops of fruit in a great deal less time than is usually supposed, or than any one might well be led to believe from what has been taught on the subject. We have once or twice before recorded some experiences on this matter; but during the past summer we have made experiments on a more extensive scale than we had had an opportunity of doing hitherto, and which we propose to describe. In November last we had ten young trees from the nursery, which were planted in a late house as soon as received. As we would be quite without Peaches during two months in the autumn till these trees came into a bearing state, it was determined to get them on as fast as possible, on the extension principle of encouraging all the growth possible, and cutting little or none of it away at pruning time, in order to have a crop of fruit the year after planting—that is, next year. Our purpose so far has been fully carried out. Though the trees had only stumps of roots when they came from the nursery about ten months since, stems not much thicker than one's thumb, and about half-a-dozen one-year-old shoots 1 ft. long or so to each, they have grown well, and the smallest tree in the lot, a Royal George and a rider, is now 7 ft. across to the extremities of the branches, and the largest, a Victoria Nectarine, a dwarf, is 12 ft. in diameter and 6½ ft. high. Some of the trees have made about 100 ft. of young wood, and some branches originated from a single bud last March contain 13 ft. of wood, which could have been extended to 20 ft. had the main leaders not been stopped some time ago. The trees are in the highest health, and crowded with bearing shoots, already plumping their fruit buds at every joint, and, if we have ordinary success, we should, according to all past experience, have a good crop of fruit from each tree next summer. Few of the trees have less than thirty shoots, and, as very few of these are under 2 ft. in length, most of them nearly 3 ft., and some above 4 ft., it would be only moderate cropping to take one or two fruits off each, which would give us a good supply from the ten trees.

This may appear like counting one's chickens before they are hatched, but it is neither more nor less than we have done before on more than one occasion. Had we chosen to train the branches as thickly as is commonly done, the trees would have had twice the above quantity of wood upon them; but, as it is, the shoots are trained 6 in. apart or thereabouts, so that the sun can get to every leaf. Nothing in the way of pinching or pruning has been done to the trees since they were disbudded in spring, except in the case of an unusually vigorous shoot here and there which has had its top pinched off, or shoots cut clean out in one or two places where they were thought too crowded. Of course, useless side laterals have been stopped in the usual way, but all the earliest of these have been laid in where room could be found for them, and they now constitute the best portion of the bearing wood. For example, some of this season's shoots are over 5 ft. long (they would have been 7 ft. had they not been stopped); and, instead of pinching all the side laterals of these at the first joint in the orthodox manner, which would have given us a shoot like a fishing-rod by this time, and few or no fruiting buds, they have in most cases been laid in on the upper side of the shoots, and now these secondary shoots might be taken for this season's growth, and the main shoot that produced them for last year's wood, were it only divested of its leaves. In this way the vigour of the tree has been expended in its legitimate channel, viz., in the natural extension of the tree and the production of bearing wood. No attempt has been made to restrain vigour and induce fruitfulness by a persistent system of pinching, as some recommend; but, instead, the said vigour has been directed into as many channels as possible, and expended in the rapid enlargement of the tree and the production of a large quanity of fruiting branches and buds.

And now just a word or two about the training of the trees. They were planted, as stated, in November last, but were not tied in to the wires, except a shoot here and there to keep them apart, till the young shoots of this year were about 18 in. long, when both young and old wood were tied in loosely. About the beginning of August the trees had filled up so much with wood that a redistribution of the branches became necessary; and so they were unfastened again, and the bottom branches, in the case of the riders, were brought down to the perpendicular, or nearly so, and the central branches spread out more, but not more so than they required. Hence all the riders except one have now quite circular heads, and in some instances the bottom or depressed shoots reach nearly to the ground. It is generally thought that this depression of the side shoots weakens them; and so it does, but not seriously. With us few of these shoots are under 2 ft. in length, and one shoot, which has been trained quite perpendicularly since it was 1 ft. long, is now 4 ft. in length. As the wood in any case promises to ripen thoroughly to the extremities of the shoots, the trees will hardly be reduced in circumference at pruning time, but only balanced; and next year, if they grow as well as they have done this, they will add some feet to their branches on all sides. They are, indeed, so crowded now that we think of removing some of the trees this autumn if we can prepare a place for them in time. They will certainly have to be moved next year.

We are more convinced than ever that if we want to succeed thoroughly with the Peach under glass, and escape the necessity of continued root-pruning and cutting the natural growth of the trees because we cannot find room for it, we must build larger houses and give the trees more room. Each vigorous-growing tree should have at least a clear space of 30 ft. by 20 ft., and it will fill the same in a marvellously short time. It will pay to put the trees in thickly at first—say 10 ft. apart; but they should be removed before they interfere with the permanent trees. Riders or standards should always be planted alternately with the dwarfs, as they can be extended more rapidly than the latter, owing to the facility with which the branches can be spread out. We have seen a rider not many years old with a perfectly round head, nearly 20 ft. across in any direction. The old Peach trees at Chatsworth show what can be done by the extension system. They cover, or have covered, quite as much space as we have given above, if not more, and have had room to grow.—"Field."

Standard Gooseberries and Currants.—These are by no means new. At Duxbury Hall, in Lancashire, they formed quite a feature thirty-five years ago. If I understand Mr. Garland (p. 344) rightly when he states the height to be about 3 ft., I take it to be length of stem, and I should say plants of this height, with heads 5 ft. or 6 ft. through, would look very cumbersome. 6 ft. through would appear a very large bush grown in the usual way. The plants that I have seen were in total height about 5 ft. with heads about 6 ft. in circumference. They require the utmost care and attention to make them worthy of a well-managed garden. The advantages of the system are as follows: 1. A symmetrical row of these by a walk side has a very fine and somewhat unusual appearance, and the berries are always accessible to invalids or others who may wish to gather their own fruit. 2. It is peculiarly adapted to Gooseberries of a drooping or prostrate habit, such as the Warrington or Aston Seedling, the best flavoured of all Gooseberries, and, perhaps, the worst grower. No one would think of cultivating the most symmetrical-growing plants of all Gooseberries—the Manchester Red, for instance—in this manner. 3. The fruit being elevated so far from the damp earth attains a ripeness and flavour which fruit growing nearly on the ground never can acquire, and it is easier netted and can be longer preserved than fruit grown in the ordinary way. 4. Gooseberries grown in this manner, and not too closely together, do not in the least interfere with the cropping underneath.—Thos. Williams, *Ormskirk*.

FRUIT AT THE PARIS EXHIBITION.

I visited this exhibition between the 1st and the 8th of this month, and was therefore in time to see one of the fortnightly series of competitions of fruit, which opened on the 1st and continued until the 15th; and though I confess I was somewhat disappointed at the comparatively poor display made, I am glad to have had an opportunity of inspecting perhaps the largest collection of Apples and Pears that has ever before been brought together. The grand display of fruit which I had seen at the Crystal Palace during the preceding week doubtless had a tendency to lower my estimate of the Paris one; and well it might, for, if we except some four or five dozen dishes of Duchesse d'Angoulême Pears and the same number of Reinette de Canada and Emperor Alexander Apples, there was nothing approaching the show at Sydenham. The collections from various Continental horticultural societies, which consisted nearly wholly of Apples and Pears, were arranged under a projection in the open air alongside the main building of the Exhibition, and filled tables running the entire length of it. The latter were much too high, and the loose gravel upon which one had to walk covered the fruit with dust. Notwithstanding this drawback, however, the display was a good one. No special prizes were offered, and when I inspected them on the 5th no awards had been announced, so I simply noted a few of the finest-looking fruit. Amongst Pears, these were Duchesse d'Angoulême, of which splendid fruit appeared in every direction, General Todleben, Beurré d'Aremberg, Beurré Clairgeau, Easter Beurré, and Josephine de Malines. Amongst Apples, Reinette de Canada took the lead, then Calville Blanche, Bedfordshire Foundling, Emperor Alexander, Gloria Mundi, and Calville Rouge. The Apples generally, both dessert and kitchen, were inferior to those shown in England, and certainly not nearly so well coloured, though one expected in such a climate to have seen them better in that respect. There were a few Grapes and Peaches also on this table, but nothing calling for special remark. The principal Grape display was held in a building situated between the large exhibition building and the Trocadero, and consisted entirely of Grapes grown in the open air—to me a most interesting exhibition, though I could not help thinking that in the matter of setting up the fruit one might have given the exhibitors a lesson which most certainly was required; for here some of the bunches were thrown on to dishes, others were laid on boards, others on old boxes, others placed in flower pots, and some in what would be considered by the owners ornamental stands, which, however, did not make the fruit approach anywhere near the worst fruit that was shown at Sydenham the week previous. The principal varieties were Chasselas de Fontainebleau (Royal Muscadine), Esperione, Frankenthal, Muscat Noir, and Black Ischia.

In an adjoining building the great Parisian Potato Show was held, and was poor indeed—not but that there were plenty of tubers, for there were many hundreds of dishes, but the only good lots were furnished by Messrs. Carter & Co., High Holborn, and Mr. Porter, Old Meldrum, N.B. There were classes for twelve sorts, twenty-five sorts, and unlimited numbers. Mr. Porter easily beat his opponent in the limited classes, but in the other Messrs. Carter won the day, showing over a hundred against some fifty kinds put up by Mr. Porter. Messrs. Carter's tubers were all excellent, though a little discoloured, doubtless through exposure at Sydenham previous to going to Paris. Mr. Porter did not show at the Palace, hence the beautiful clearness of his specimens. W. W. H.

Storing Fruit in Malt Dust.—To "W. W. H.'s" seasonable remarks on storing fruit (p. 260), allow me to add an admirable recipe for keeping Apples and Pears given me a year or two ago, and which may not be so well known as it deserves to be. The plan recommended (and proved by most satisfactory results) is to pack the fruit in malt dust—easily to be obtained from any brewery—in ordinary flour barrels, and to store them away in a dry place.—Winchmore.

ROSES.

ROSE GROWING IN FRANCE.

(Continued from page 356.)

Sowing in Pans.—In cold climates Roses should be sown in pans. Each pan, after being properly drained, is filled with heath mould lightly pressed down. The seeds are scattered over the surface and covered with a layer of heath mould $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in. thick, which is flattened by being pressed down with the bottom of another pan. The pans, after having been labelled, are taken into a cool house and placed in a frame close to the light. The young plants will begin to make their appearance about February or March. The pans must be kept clear of weeds, and the soil should be kept slightly damp, but not moist, until it is time for planting out, which is performed in the way already described.

Propagation by Cuttings.—It may be asserted that all Rose trees may be multiplied by cuttings; the soft-wooded kinds, however, are most likely to yield the best results when propagated in this way. In consequence, these varieties are generally chosen for the purpose. On a large scale well-known varieties are propagated in this manner in the open air and under bell-glasses between the beginning of August and the end of October. The method adopted is nearly the same as that already described; there are, however, certain details connected with it upon which commercial horticulturists lay great stress. The method about to be described is that used by M. Louis Vacher, of Petit Vitry, well known as a successful Rose propagator, who has done great service to horticulturists by making known the system on which he works.

Propagation by Cuttings in the Open Air.

Preparation of the Beds.—A border from 2 ft. to $2\frac{1}{2}$ ft. in width is dug at the foot of a wall having a favourable aspect. The surface is then raked smooth and the edge of the bed is kept firm by a bordering of wood fastened by pegs. A layer of very dry and well-broken-up horse manure, about 6 in. thick, is then spread over the surface of the bed and made smooth with a fork. On the top of the manure is scattered a layer of fine sand, from $2\frac{3}{4}$ in. to 4 in. thick, the surface of which must be carefully levelled. The bed must be kept just damp, but not wet.

Preparation of the Cuttings.—The cuttings are generally prepared in the shed where the shoots which have been cut off the parent plants are stored. The leaves are all cut off with a pair of scissors, and the shoots are cut into lengths of from 2 in. to $6\frac{1}{2}$ in. long, according to the size of the slip, but always so as to obtain as many cuttings as possible. The slips are cut at right angles to the axis of the shoot, and immediately below an eye. As the cuttings are prepared, they are thrown into a basket containing a damp rag. Generally speaking, the last fragments, which have a heel to them, are put on one side, as well as those which have been previously detached from the parent stem, as these cuttings are more likely to strike easily than the others.

Planting the Cuttings.—In planting the cuttings we always begin with the longest, which are placed close under the wall. They should be thrust into the soil to the depth of from $\frac{3}{4}$ in. to 1 in., according to their thickness, and should be placed at about $\frac{3}{4}$ in. from each other. The bed is continued until it is full, always taking care to plant the cuttings according to size—the longest nearest the wall and the shortest in front. A slight watering should now be given with a fine-rosed can or, better still, with a syringe. The beds must next be covered with frame-lights, which are laid over them so that the upper edge rests against the wall and the lower on the wooden edge of the border. M. Vacher, who plants cuttings at the rate of 30,000 a year, found one day that he had run short of lights, so it struck him that it would do just as well to use sheets of zinc, 4 ft. long by 2 ft. 8 in. wide. He was afterwards struck by the fact that the cuttings so sheltered seemed to thrive better under the zinc than under the glass; he, consequently, renewed the experiment and proved the fact in the most conclusive manner. A little consideration will, however, show that in this case theory and practice are in perfect agreement. The metal, which is a good conductor, absorbs the heat without reflecting it as the glass does, in addition to which, zinc being a more powerful radiator than glass, the heat absorbed by the metal is much more readily transmitted to the plants. For this reason the cuttings under the zinc receive more heat and less light than those under glass; they, consequently, lose much less by evaporation, being very much in the same condition as cuttings struck in closed dark frames. At night the zinc is covered over with straw mats. Cuttings grown in the open air begin to take root from the thirtieth to the fiftieth day. Gentle waterings are given whenever the soil shows signs of becoming dry, and the zinc coverings are taken off at night during the months of September and October to prevent the cuttings from growing too fast. In November and December M. Vacher's cutting beds present a verdant appearance, which, from a distance, resembles that of a piece of turf. When the cold sets in, the planks supporting the beds are protected by a heap of dry stable manure mixed with dead leaves and the glass or zinc shelters are covered with straw mats, which are taken away whenever the sun shines. These precautions are sufficient for successfully wintering cuttings in the climate of Paris. In those countries where the thermometer falls as far as 20° or 30° Fahr. below the freezing point we must double the straw coverings. It is, however, safer to remove the cuttings when the severe weather has commenced, transplant them into small pots, and put them into frames thickly surrounded by stable manure, or else into a well-protected greenhouse

Planting Cuttings under Bell-glasses.—Cuttings struck under bell-glasses are prepared in the same way as those intended for propagation in the open air. The ground is also prepared in the same way. The bell-glasses are pressed down on the surface of the bed, and the cuttings are inserted at the rate of 200 to 500 slips for each bell-glass within the arch left by the rim, after which they must be immediately covered with the bell-glasses. During the cold weather the glasses are surrounded with dry stable manure and dead leaves, and covered over with straw mats which are taken away when the weather is fine. The glasses should be propped up whenever the weather is warm enough to give the cuttings air and drive out the moisture.

Transplanting the Cuttings into the Open Ground.—During the month of May the beds which are intended for the transplanted cuttings are dug and manured. The beds should be about $4\frac{1}{2}$ ft. wide, and separated from each other by a path about 16 in. in width. Each of them will hold four rows of cuttings, 14 in. from each other and 6 in. from the edges of the bed. When all danger from the cold is over, which in Paris happens about the end of April or the beginning of May, the cuttings are removed with a trowel, or some such tool, care being taken not to injure the roots. They are then placed in a basket and covered over with a damp cloth to prevent evaporation, after which they are planted out in the beds prepared for them in the usual manner. The distance at which each cutting should be planted from its neighbour in the same row depends a great deal on its hardiness and kind. Generally speaking, the distance for Perpetuals is 12 in.; for Tea, Bengal, and Bourbon Roses, 8 in.; for Noisette and China Roses, from 16 in. to 12 in.; and for Dwarf Lawrence and Pompone Roses, 4 in. The cuttings are planted with a dibber, holding the young stem in the left hand; it is placed in the hole made by the dibber, which should be about $2\frac{1}{2}$ in. deep. Some of the soil is then thrown into the hole so as to cover the roots and fill up the hole, after which a few strokes of the dibber are given to the earth round the stem so as to fix the cutting firmly in its place. This operation prevents any empty spaces being formed round the roots. After the whole of the bed is planted, the cuttings are watered. The surface should be well forked about May, and a quantity of stable litter or well-rotted manure dug in. During the summer the beds must be watered and weeded whenever they require it.

Striking Bengal Roses in the Open Air.—In cold climates horticulturists who propagate Bengal Roses for market adopt a system which is somewhat different from that described above. Fig. 7 shows two cuttings struck in the open ground, one with a boss and the other well rooted. The Rose trees which are intended to remain in the ground and furnish cuttings for striking should be planted in open beds. In the autumn, before the frosts set in, the shoots which are to form the slips are cut and divided into pieces of from 8 in. to 10 in. in length. These slips are tied up in bundles of 100 each, each bundle containing slips of the same general appearance. They are divided into two classes, the first including those of from 1-5th in. to $\frac{1}{2}$ in. in diameter; the second, those which are cut from the lower part of the shoot, and which ought, if possible, to be provided with a heel. The bundles of slips are placed in a cellar and laid by the heels in some fine sand or heath mould, or they may be laid by the heels under glass in a frame which is well protected from the cold. In the spring the slips are planted in the borders prepared for them as described above.

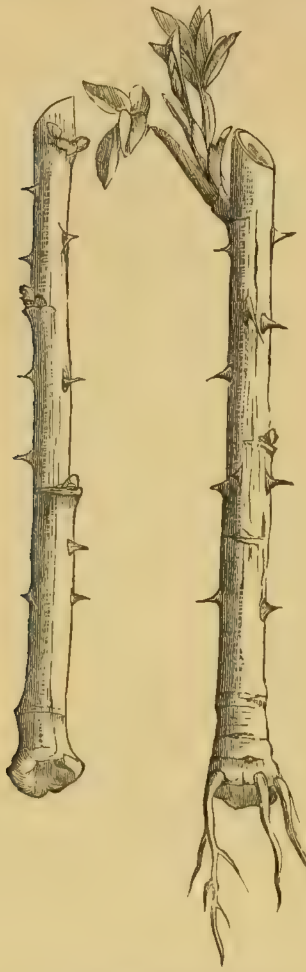


Fig. 7.—Cuttings struck in the open air.

Propagating by Herbaceous Cuttings in Winter.—This method of propagating is used by practical horticulturists to multiply new varieties with great rapidity so that they may be ready for the market in November or December. The plant from which the cuttings are to be taken is kept in the propagating house, and the mature shoots cut off and grafted on dwarf stocks prepared for the purpose. The parent plant, under the influence of the heat of the propagating house, which should be kept at from 60° to 70° Fahr., throws out herbaceous or soft shoots, which are allowed to grow to the length of from 8 in. to 10 in., not only that they may be of a certain thickness, but for the sake of obtaining as many slips as possible from each shoot. The shoot, after it has been cut off from the parent plant, is divided into slips, each slip having two or three eyes, the leaves being left on. It is planted in a small pot $1\frac{1}{4}$ in. in diameter, filled with heath-mould (see fig. 8). The earth is sprinkled with a few drops of water and the pot is set aside until some seventy or eighty have been filled. A large bell glass is then taken, and the rim pressed down on the surface of the sand or tan of a frame, so as to leave an impression. Within this circle some seventy or eighty of the pots containing the cuttings are plunged up as far as their edges. The bell-glass is then placed over them and pressed down firmly so as to keep in the heat of the frame. Cuttings propagated in this manner require a great deal of care. The bell-glasses must be lifted up every day for a certain time, in order to change the air. The condensed moisture on the inner surface of the bell-glasses is wiped off, and those pots whose soil shows symptoms of becoming dry are sprinkled with a few drops of water. In about eight days' time the swelling of the cellular tissue which precedes the formation of the roots may be perceived; about the twentieth day the whole of the cuttings will have struck, and about the thirtieth the roots will appear at the surface of the soil. Towards the fortieth day the cuttings which show the most roots are examined. For this purpose we must lay hold of the edge of the pot with a couple of fingers of the left hand, the cutting passing between them. On reversing the pot and giving the bottom a few smart taps, the cutting with its ball of earth will come out of the pot. If the roots surround the whole of the ball the cutting is returned to its

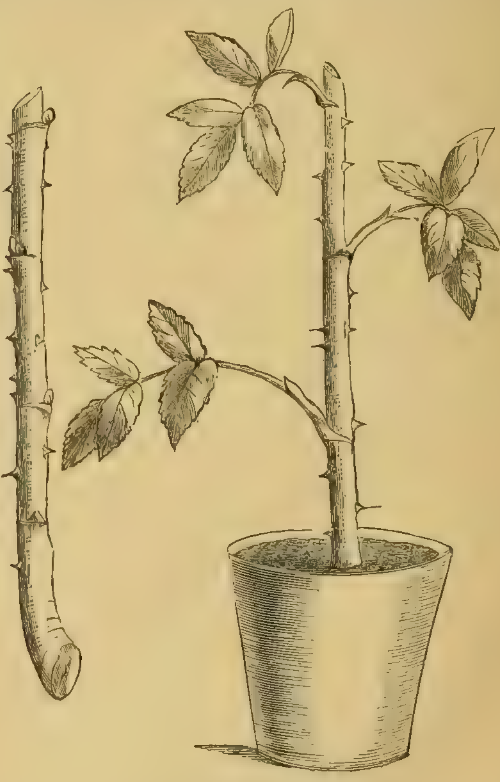


Fig. 8.—Cuttings struck in heat.

pot, and it is placed in another frame, but without plunging it in the tan or sand. The same thing is done with all the other cuttings which show the same development of roots. They are then covered over with a second bell-glass, which must be propped up by an empty pot so as to accustom the young plants to the air. The slips which show but few roots are returned to their frame after having well stirred the sand or tan. In about a week's time the first set of slips are repotted into pots of from 2½ in. to 3½ in. in diameter, which have previously been properly drained. For this purpose the pots are filled with heath mould, a sufficiently large hole is made in the middle of it, and the cutting with its ball is dropped in, care being taken to press the earth well down all round it. The cuttings or plants, as we may now call them, should be watered and placed on shelves, or in another frame in the same propagating house. At the end of a month they may be removed to a cooler house. By adopting this mode of proceeding we may obtain in three or four months a hundred grafted stocks or well-grown cuttings. J. Lachaume.

ROSE GROWING IN FRANCE.

M. Lachaume writes well, understands his subject, probably is possessed of ground suitable for the cultivation of even the shyest-bearing Roses, yet he lays down laws where he should give opinions. In the first place, what ordinary amateur Rose grower distant three miles from London or Paris ever could confound the ordinary Dog Rose with the Sweet Brier. As to stocks, they should be taken from the coppice before the sap rises and the buds should be inserted as soon as they can be procured, thereby ensuring prompt assistance from the Brier. Many times have I cut Roses the same season, but I do not consider the plan wise, for often a dormant bud makes the best tree. In the second place, no "clever labourer" could get from 150 to 200 stocks in a day; if he did, he would not do it long. Every stock in England fetches at least one penny; therefore, although he smashed a spade, pickaxe, and half-a-dozen new-fangled instruments for extracting the Wild Rose from the hedges, yet his earnings would amount to a considerable sum. In the third place, M. Lachaume's directions about length of instruments and manner of propagating Roses are fallacious, as there is only one (I have tried all) way of succeeding. All must be done by striking cuttings. Wild Briers, unless earth be rubbed on the cut stock, die back. Grafting is equally bad. No; take your cuttings now in October, give them moderate care, and do not let trees drip on them. When struck, put them in a very little heat, and then you are right for next season. Eugene E. P. Legge.

Litton Cheney, Dorset.

REPLANTING ROSES.

Formal geometrical Rose gardens seem to me an anomaly. The Rose does not take kindly to a formal garden; for a year or two they may look bright and prosperous, but after a time deaths become numerous, and only a few of the most vigorous appear really at home. It often happens that when the plants in the Rose garden are dying off in a most unaccountable manner, those standing in the kitchen garden borders, where budded, are doing splendidly. Such is the influence of fresh soil; hence the importance of frequently changing it if Roses must be confined to one spot for a number of years. No crop that occupies the land the whole year round can be continued beyond a certain period without deterioration, and to plant young plants where others have died without a renewal of the soil is courting failure. The Rose is more susceptible of the injurious effect of this than almost any plant I know. A few of the vigorous growers will do well under almost any circumstances, but many of the greatest beauties are capricious in their tastes, and thrive all the better for a little fresh turfy soil being placed round their roots. In dealing with Roses in the formal garden, or in any other position where it is necessary they should occupy the same site for a number of years, I have always found an advantage in taking the plants all up every four or five years, partially renewing the beds or borders with turfy loam or manure, adding a little clay if it be light, trenching and mixing it all together, and then re-planting. In pruning the following spring I cut back rather closely, and delay the operation a week longer than usual. Many a plant showing signs of debility has been restored and brought back to vigour by this means, and on some soils it is the only way to keep a Rose garden in a presentable condition. Even those to be depended on, such as Jules Margottin, Gloire de Dijon, &c., are none the worse for being lifted occasionally, unless they cover a large space on a wall or a pillar; then, indeed, their rampant growth will find scope, and be converted into blossoms. I have often thought if the strong growers and the weakly, delicate kinds were grown in separate beds, or in some way managed so that the latter could have extra pains bestowed upon them, the result would be more satisfactory. E. Hobday.

ANSWERS TO CORRESPONDENTS.

Tacsonias.—I have Tacsonia Van Volxemi growing in a conservatory the leaves of which are unhealthy and shrivelled like the enclosed. Will you kindly say what is the cause of it, and the best remedy?—Amateur Subscriber. [We can see nothing alive on the leaves. They appear to be shrivelling on account of the soil being dry or the stem being bruised in some way.]

Netting Melons.—Allow me to inform Mr. Gilbert (p. 344) that his plan of netting Melons is not new. I have been in the habit of netting my Melons artificially for years past; that is, any that I had reason to believe needed assistance in that way. I was first made acquainted with the plan through Mr. Blair, the gardener at Shrubland Park. I fix the pin in a small piece of wood, leaving just sufficient for my purpose of the point protruding; by this means the operation is easily performed and the results are most satisfactory.—J. J., *Co. Cork.*

Re-potting Azaleas.—Will you say if large specimen Azaleas, that seem to want a little help, and which have not been re-potted this year, may be repotted now? They are just showing flower buds.—Amateur Subscriber. [Assist them with Standen's manure, and shift them after they have flowered.]

Pampas Grass not Flowering.—I have a plant of this that once (twelve years ago) sent up many heads of bloom, but has never flowered since. It has protection during the winter, and liquid manure has been tried, but without result. What had I best do?—C. W. S. [According to my experience, Pampas Grass always flowers freely after being well established. If the plant be large, transplant it at once to where it will be exposed to the full blaze of the sun. If small, delay doing so till the middle of April.—A. F.]

Winter-blooming Greenhouse Climbers.—Allow me to inform "J. W." (p. 319) that the border being outside, it will be necessary to protect the stems of the plants up to the point at which they enter the house. If that be done the following will grow and flower well all the winter in the temperature named, viz.: Tropæolum Lobbianum, Perfection, and Ball of Fire; all kinds of Heliotrope; Abutilon Boule de Neige and A. Lemoinei; Tacsonia exoniensis and T. mollissima; and Gloire de Dijon and Souvenir de la Malmaison Roses.—W. W. H.]

Preserving Nuts.—I can strongly recommend to "Z. P. A." (p. 319) the following way of keeping Nuts fresh: Gather them on a fine day, and lay them out in the sun for a couple of days till thoroughly dry; then store them in large earthenware or stone jars with lids, and on top of the Nuts put 3 in. or 4 in. of Cocoa-nut fibre refuse. Keep the jars in a cool, dry place. I have kept Nuts fresh in this way till new ones came in. Walnuts may be kept in the same way, and would be quite fresh at Christmas, but they do not keep good so long as Filberts or Cob Nuts. I do not recommend the use of salt, as it invariably goes damp, and if the Nuts get damp they begin to grow, and are then bitter and uneatable.—Devonian.

Lapageria rosea superba Out-of-doors.—I, and no doubt others, would like to know how Mr. Stephen Williamson (p. 345) has been so successful with the above out-of-doors. How long has it been outside? for from its size it can hardly be a young plant; and what protection is given it in winter? Is this the first year in which it has flowered outside? I fancy perhaps it has been an established plant in some house that has fallen out of repair and been taken down, and so it has gradually become accustomed to a cooler temperature.—"A Lady of Devon." [Mr. Williamson writes to say that the Lapageria in question is all that the paragraph states respecting it; but it is in a cool greenhouse, and not in the open air. The Lapageria will live out-of-doors in this country, but it would certainly not flower so profusely as under glass.]

Wintering Gloxinias and Achimenes.—What am I to do in winter with my Gloxinias and Achimenes? I have bloomed them this summer in a Cucumber frame. The temperature of my greenhouse averages during winter 45°. Can I keep them there, if so, am I to let them get dust dry, or must I occasionally water them.—John Bertram, *Dulwich.* [Give them a little water occasionally until all the leaves have died down, when they may be stored away in a warm corner under a greenhouse stage, laying the pots on their sides, or you may turn the bulbs out of the pots and pack them in dry silver sand in a large pot or pan. In this way they keep best, but they should not be turned out until a few weeks after the tops have died down.—S.]

Select Fruit Trees.—What are the most suitable Cherry trees, Currants, Gooseberries, or other fruits for the following positions, viz., an angle where the south and west walls of the kitchen garden meet, enclosed with wire netting to keep out blackbirds. The aspect is, therefore, north and east, only visited by the early morning sun; consequently, I want those fruits that require least sunshine to induce them to ripen. I should also prefer somewhat choice and late kinds to succeed the fruits in the unprotected parts of the garden. The cage, if I may so term it, is about 50 ft. long, 12 ft. broad, 11 ft. high on the wall plate, sloping to 4 ft. in front.—J. H. W. T., *Carlow.* [Of Cherries plant the Morello and Late Carnation; Currants and Gooseberries, all kinds; Plums, Kirke's late Green Gage, Reine Claude de Bavay, and Late River's; Pears, Marie Louise, Josephine de Malines, Thompson's, and Van Mons, Leon le Clerc. We have all the above in Northern positions, or on north walls, and find them do well.—W. W. H.]

Cutting Down Evergreens.—What is the best time for doing this? Some of my plants have got much too large.—J. S. [They may be cut down at any time, but the best time is when growth is commencing in March or April, for then the wounds quickly heal. It is not always convenient to leave such work till the end of April, though if it can be done there is then no danger of the young shoots getting sufficiently advanced to be injured by late spring frosts.—W. W. H.]

Lamp Heating.—As no one has ventured to reply to "J. L." (p. 275) respecting this subject, perhaps an amateur's experience might be useful. My plant house, a lean-to, 15 ft. by 9 ft., was kept warm during two winters by means of a paraffin lamp, costing 17s. 6d., burning petroleum at (at that time) 2s. 3d. the gallon—much less now, I believe. It had a flat base or well about as large over as a dinner plate, an upright iron body, and a domed top pierced with holes. The well was easily filled by a side tube, and the wick, having the charred part cut off occasionally, was quickly lighted or extinguished, and in summer the whole affair could be removed. No smell could ever be detected; and what I would like to direct particular attention to is, there was not the slightest sign of blight of any kind during those two winters, and the plants were perceptibly of a brighter tone and crisper than they otherwise would have been. Two faults were noticeable; firstly, the expense (a winter's night of twelve or fourteen hours costing 6d. or 8d., as dear, or dearer, than coals); secondly, the power of resisting cold. Rarely could the warmth inside the house be made to exceed that of the outside 10° or 12°. Suppose a frost occurred outside registering 30°, the inside temperature would be about 40°. If it has been 20° outside, then the inside would have ice over the roof, and the thermometer 32°. I, therefore, discarded the lamp and tried quite a different kind of heating, the result being extremely interesting, though not, perhaps, sufficiently so for the generality of your readers.—Gwencolne.

Names of Plants.—*Mrs. D.*—1, Euphorbia fragifera; 2, Euphorbia angulata. *Anon.*—The Fern is Polypodium normale, East Indies; the shrub, Pittosporum tenuifolium, New Zealand.

Names of Fruits.—*H. F.*—Beurré de Capiaumont.

Alnwick Seedling Grape.—I recently saw this truly noble-looking Grape in excellent condition, the colour and bloom being faultless. Will anyone furnish a few details as to its suitability for general culture?—J. Groom.

THE KITCHEN GARDEN.

VEITCH'S GIANT CAULIFLOWER.

August and September are the worst months for Cauliflowers if we wish to have them firm and good. Formerly, when I had to depend upon such kinds as the London and Walcheren, there was much trouble and anxiety, in our hot, porous soil, in keeping up a succession through those months, that is, in securing good, white, close hearts. Now, with Veitch's Giant I have no trouble at all. I sow the latter in the autumn with the other kinds, and plant out at several times in the spring; sow again a few seeds in heat in spring, and plant these out at different times also, and they follow on in succession as evenly and naturally as possible. I had one bed of the Giant from autumn-sown plants planted early in April, which commenced to turn in just about the time the Early London were finished in July, and we were cutting from that bed till the middle of September. The successional character of the crop adds to its usefulness in a private garden, as when a bed of Cauliflowers nearly all come in together many of them either have to go to the pigs or the rubbish heap. According to letters in a contemporary there has been some disappointment felt in some places with this Cauliflower coming in late this season, and this may occur sometimes if sowing be made only in the open air in spring, as, like all other things, Cauliflowers are affected by times and seasons. But there is no danger of a break in the supply if a few seeds are sown in autumn and a few more in March, the latter in a slight hotbed. There is yet time to sow these seeds, only now, at this late season, they should be sown in a box in a cold frame close to the glass. When the plants are up and large enough to handle, prick them off into other boxes, or, better still, singly in small pots, and place them on a shelf near the glass in the greenhouse, or in some place where the frost can be kept out. They might remain there till February, then be removed to a cold pit to be hardened off, and finally planted out on good, well-prepared land early in April. If large heads are wanted plant 3 ft. apart; but usually small heads are more appreciated than large ones, therefore 2 ft. or even less space will suffice. I have cut good close heads 1 ft. in diameter, but few people care about them so large; but by close planting and cutting early they may, of course, be had as small as anyone likes. I may perhaps be told that it is a waste of house room to grow Cauliflower plants under glass in this way. Well, it is so pleasant to have the different crops come in just at the time they are required, one does not begrudge a little extra trouble to secure it; and as such shelves are usually taken up with bedding plants in winter, with a little management I have never found any difficulty in making room for a few hundreds of Cauliflower plants. By helping them on in this way the sowing may be delayed a little beyond the ordinary time. And such plants never button prematurely; indeed, when treated thus, October is quite early enough to sow. E. Hobday.

Late-sown Scarlet Runners.—At this season of the year when outdoor vegetables are comparatively scarce, and when forced productions have not yet made their appearance, a good crop of Scarlet Runners is extremely valuable, as they continue bearing long after the more tender French Bean is over. For this supply a good sowing should be made about the middle of June, and the plants should be treated in other respects exactly as those from earlier sowings are. They should be securely staked, as rough winds invariably prevail in autumn, and as sheltered a position as possible should be selected for them. It is too often the case that only one sowing is made in spring, and when the plants from this cease to produce pods fit for gathering the season is considered over; any one, however, who gives the late-sowing system a trial, will, in average seasons, greatly prolong the gatherings, and will find the Scarlet Runner even more useful as an autumn than as a summer vegetable. It may be remarked that gathering the produce as soon as it is fit for use, and not allowing any pods to get old and seedy, is most important, as seed-producing is an exhausting matter, and soon brings the productive power of the plants to a standstill. Thin sowing is also advantageous. Upright rods securely fastened to horizontal ones make a good support on which to train the plants.—James Groom, *Linton, Maidstone.*

Tomatoes—Smooth *v.* Wrinkled.—Nearly all things that come under the improving hand of man in course of time lose their ruggedness of outline. Refinement of form and expression is one of the effects he seeks to produce, and, consequently, raggedness of petal in the case of flowers, or roughness of exterior in the case of fruits sooner or later gives way. It is so in the case of the Tomato, for nearly all the newly-raised and introduced varieties are either circular or oval in shape. Formerly, when Tomatoes were only used for making sauce, form or shape was of no consequence; but now, when Tomatoes are coming into general use, not only as sauce, but also as vegetables, often served up whole, regularity of shape and size assumes an importance it did not formerly possess. Possibly, in the future the Tomato may be useful as a dessert fruit. I have often gathered fruit of Tomato ripened in a warm house that have possessed a rich flavour, containing quite sufficient saccharine matter to suit many palates, and in this direction still further improvement may be expected. Three of the best smooth kinds at present are Hathaway's Excelsior, Vick's Criterion, and Carter's Green Gage. The first possesses size and beauty of outline. The second is a handsome, oval-shaped, amber-coloured fruit, of medium size. The fruit should be thinned out well when quite small, as it bears freely. It is a good kind for growing in pots under glass. And the last is a yellow kind, well known and appreciated everywhere. Even where the wrinkled kinds are highly prized, it is as well, in order to keep pace with the times, to grow some of the smooth sorts in addition, as they are nearly sure to be inquired after for serving up whole, and for using in various ways.—E. Hobday.

Sutton's King of the Cauliflowers.—This has been very fine with us this season. It is quite a cottager's Cauliflower, as upon the same ground it will produce nearly four times the weight of any other Cauliflower. We had quantities of heads weighing over 15 lb. each, and one fine head weighed 28 lb. It is very close and white.—J. Miller, *Clumber.*

Vegetable Marrows on Railway Embankments.—We notice that Vegetable Marrows grow vigorously on railway embankments on the south side of London. They have a deep and, as a rule, a loose soil in which to grow, and, being in an exposed but sunny position, they not only grow well, but fruit with marvellous freedom. Bare spaces of this kind might be more frequently devoted to the growth of this vegetable, which, if left to ripen and stored, will furnish wholesome food all through the winter, and go far to compensate for the losses sustained by the failure of the Potato crop.—S.

No. 363.] SATURDAY, NOVEMBER 2, 1878. [Vol. XIV.

"This is an art
Which does mend Nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

LAXENBURG.

THIS is the favourite summer and suburban home of the Emperor of Austria, and a notable garden in various ways. To begin with, the superintendent (or "inspector") of the very extensive gardens and grounds, M. Rauch, lived more than ten years with Loudon in Porchester Terrace, a fact which in itself would make a visit to Laxenburg interesting to anyone acquainted with the history of English gardening. And it is fitting that one who worked so much at the "Arboretum Brittanicum" under Loudon should be entrusted with the charge of the many fine trees that surround these noble lawns. The place is the very opposite of Schonbrunn. No green Gower Streets here; but a rich variety of stately tree-life surrounding great lawn-like vistas, many of them emblazoned with such glory of golden and crimson colour as is seen in the Indian summer in the woods of North America. The house is not set in a terrace garden, but on level ground; only a broad walk separates the palace from lawns fringed with flower beds and stately masses of fine-foliaged plants. Perfect ease of movement from the rooms to the turf on which stand so many objects that invite attention is one of the good points thus secured. Indeed, this grateful ease of movement (without the steps and walls and impedimenta, of which a small catalogue might be made in many gardens) is noticeable throughout the grounds, except in one place where certain remnants of an old Dutch garden are allowed to remain. One can pass from wide, sunny, breezy lawns, delightful in the October days, to the shade of great groups of Honey-Locust, or Oak, or Abele; and then, if so disposed, among climbing and other Roses, numerous fine-leaved and flowering plants, all arranged so on the Grass that one can move about among them as easily as in a well-arranged room. There are many beds, but the majority of the more striking plants are placed on the turf, singly or in groups. Sometimes the more distant groves are furnished with underwood, but more frequently the turf passes beneath the great trees, which leaves the views more extended and interesting. It may be more convenient if a few notes concerning such things as seemed most instructive be thrown into a paragraph form.

ACCESS TO THE GARDEN.—This garden is open to the public without any kind of reservation whatever every hour in the day and every day in the year to anyone who wishes to visit it or anything it contains. Let it be noted that it is the private and favourite garden of the Emperor, and not one founded and supported for purposes of instruction and study like Kew. No difference whatever is made whether the Emperor is at Laxenburg or not. No sunk fence or railing reserves any particular part of the ground near the palace from which the public are cut off. And in consequence of the wide extent and good landscape gardening (for perfectly flat grounds), full collections of European and American hardy trees, it is more instructive than most Continental botanic gardens, even from a botanical point of view. It is worth while to compare this perfect freedom of access to the garden not with the system that obtains in Her Majesty's own gardens, but with Kew, an establishment avowedly for public teaching. One or two other instances may be mentioned of wise liberality to the public in Vienna on the part of private individuals, who, of course, support their gardens and palaces wholly at their own expense. One is the large and pleasant garden of Count Schwarzenberg in Vienna itself; the other that of Prince Liechtenstein, behind the precious gallery of pictures, which is also so freely open to the public. The Schwarzenberg garden, which is by far the largest and most important, is open to all from an early hour in the morning till evening—the gates only being closed during very bad weather when nobody would care to go. These last instances are not mentioned because it is rare for proprietors of gardens to open them freely to those who have none. We have not a few in our own country who are liberal in this respect. But these gardens are opened throughout the day in the heart of a great city, and hence their interest for us as regards the regulations concerning our own public gardens. It is almost needless to add that the Botanic Gardens of Vienna, situated in the city, are open to the public throughout the day.

OCTOBER LEAVES.—It would be worth the while of the owners of many acres to plant trees for the beauty of their autumn colours alone. At Laxenburg many of the trees were beautiful in this autumnal glory, noticeable among them being the Honey-Locusts (Gleditschia)—some branches green and others clear yellow—the larger branches sweeping the Grass; the Yellow-wood (Virgilia lutea) of which there were many trees; the Black Walnut (Juglans nigra), now so much used for furniture in London, was in many cases a mass of golden leaves from top to bottom, its useless fruit abundant on the ground, while the common Walnut near it had no beauty of colour. The Kentucky Coffee trees were also fine in colour and very numerous; though finest of all were the Black Walnut and the Tulip tree, which is grand in its autumn dress where the trees are large and there are a few sunny days to cause the leaves to "ripen well," so to say, before falling. The most vivid spots among these richly-hued groves—the lightning among the clouds of gold—came from the well-known Venetian Sumach (Rhus Cotinus), which is a native of Austria and many other cold parts of Europe, in none of which it thrives better than in Britain. The common Spindle tree (Euonymus europæus) was also most striking in certain positions, not for its fruit, but for its leaves. One crimson flake near the edge of a grove, splendid at a long distance off, was traced to this. Not the least remarkable, however, among such trees was the dwarf Æsculus macrostachya, which all who know it admire for its fragrant spikes of flower. Here, where it was exposed to the light, the ample leaves were rich in gold and brown. There is probably no other tree so dwarf (good specimens being under 4 ft., and spreading) which would give such fine masses of colour so near the ground. Therefore it has another merit for our gardens besides its sweet flowers and ample foliage.

SOME OLD PLANTS CULTIVATED.—Some very old and wholly neglected garden plants are here grown so well, that they astonish one with their beauty and vigour. For example, who out of a botanic garden grows the old Persicary (Polygonum Persicaria) now-a-days? In the Regent's Park, by accident probably, some of it grows in a shrubbery among plants that nobody ever takes any notice of. Here there are many specimens of it 8 ft. high with leaves 20 in. long, and the inflorescence so well developed that each plant droops down gracefully at the top, where, in fact, it becomes a long plume of crimson racemes. No lovelier plant has been seen in the flower garden. This result was brought about by cultivating the plant (as Castor-oil plants are grown) instead of sowing it as most hardy annuals are sown; that is to say, it is raised in frames, each plant being well grown before it is planted out in rich ground for the summer. This plant, so treated, is a valuable addition to the resources of those who care for variety and grace in the flower garden. The old and well-known Love-lies-bleeding and Prince's Feather were treated in like manner, and with results nearly as remarkable. Zinnias grown in much the same way were 5 ft. and even 5½ ft. high! This is a plant the capacities of which do not seem to be recognised with us, it being so often treated as so many annuals are, that is to say, starved or half grown. A brilliant scarlet variety was the most plentiful here; it was quite double, the overlapping petals raised like a cone, and the colour as vivid as that of the most brilliant forms of Anemone fulgens. The large form of the Evening Primrose, commonly known as Œnothera Lamarckiana, and which is such a valuable plant for the wild garden, is here well grown in small beds near the Palace; its habit of opening a number of small terrestrial moons to illuminate the scene during the night having made it a favourite with the Emperor.

SOME OLD GREENHOUSE PLANTS IN THE FLOWER GARDEN.—The previous paragraph concerns annuals; some old-fashioned inmates of the greenhouse are grown to grace the flower garden in an equally happy way. Plumbago capensis, for example, which is so admirable when its blue flowers are depending from pillar or rafter in the greenhouse, is grown here into pyramids from 3 ft. to 8 ft. high, and placed out of doors in such condition that it flowers throughout the summer and autumn as a free and graceful pyramidal bush. Those who know the plant when grown so that its flowers hang down naturally may form an idea of the effect which it produces. The Heliotrope is grown exactly in the same way, only in some cases a foot or two higher. These pyramids are plunged in small groups in Grass, so that those who admire them can pass easily among them. Perhaps more valuable than either—though nothing can be more lovely than the Plumbago—are many specimens of the old white Brugmansia, single and double, also grown for placing in the open air in summer and flowering throughout the summer and autumn. It may be imagined how well a group of these plants, with their numerous great white trumpets, look in a green nook backed by evergreens and trees. All such old plants as these are taken up in October and stored in cool houses for the winter. The taller and finer specimens are the growth of a good many years. With such materials it is easy to diversify the surface of the flower garden. Here, however, a variety of other subjects are used for this purpose, the masses of fine-leaved plants being so bold, that they give quite a tropical aspect to some parts of the ground even from long distances.

A GROUP OF TREES.—Very fine were the trees here where allowed to group themselves naturally and with plenty of room. Particularly interesting was one group of a tree which, owing to the general plan of crowding trees together so as to form a monotonous green mass, is never taken much notice of. It is Elæagnus angustifolia which grows so here that it may well serve to show how much we lose in our botanic and other gardens by not securing the full development of and showing the characteristic beauty of each tree. Here, near the palace, a group of this tree forms a cloud of silvery leaves through which the picturesque black stems of the trees are distinctly seen. The group being isolated, the trees have attained their full size and assumed their natural form, some of the main branches crossing a stream that runs hard by, and many of the others sweeping the Grass. If so much beauty is afforded by a tree of fourth-rate importance, how much may we not expect from the same principle being carried out with the nobler ones—that is to say, showing them well developed in groups as well as singly.

NOTES FROM KEW.

Hardy Shrubs.—Amongst the very few hardy shrubs that enliven the present dull season none are so beautiful as that charming Chilian evergreen Azara integrifolia; it has a neat habit, dark green, roundish leaves, and clusters of yellow, aromatic blossoms. For a dwarf wall in most parts of England, and for the open shrubbery border in sheltered spots of the southern and western counties, this pretty shrub is a decided acquisition.

Hardy Herbaceous Plants.—Bœnninghausenia albiflora, a member of the Rue family, is a truly elegant and graceful plant; it grows about 2 ft. high, has finely-divided, glaucous green leaves, and large, much-branched, leafy panicles of small white flowers; the only drawback to this beautiful herb is that it possesses in a slight degree the somewhat disagreeable scent common to many of its relations. Cuphea silenoides and its varieties Zampari and purpurea deserve mention on account of their being nearly the only annuals which retain now any of their summer beauty; the three were mentioned in "Notes from Kew" some time ago. Chrysanthemum frutescens grandiflorum forms a dense bush, 1 ft. to 1½ ft. in height and from 2 ft. to 3 ft. through; it has bright green leaves and large white blossoms, which are produced in such profusion as to render it one of the most valuable of outdoor flowering plants at the present time. Helipterum floribundum, about 3 ft. high, has also been already noted in these columns, and its golden-orange flower heads are still in full beauty; this is one of the most showy and desirable of late-flowering Composites. The Asters, which merit special mention by reason of their being in flower after nearly all the others are past, are A. tenuifolius, a very floriferous sort, 5 ft. high, with small, narrow leaves, and a great profusion of white flower heads; A. miser var. pendulus, which grows about 4 ft. high, is somewhat spreading or even drooping in habit (not erect as A. tenuifolius), and has white flower heads, smaller than those of the first-named kind; A. ericoides, 2 ft. to 3 ft. high, which has pretty, Heath-like foliage and innumerable small white flower heads, and is now one of the best of outdoor herbaceous plants to cut from; and A. Novæ Angliæ, and its varieties pulchellus and atro-roseus, three of the very finest of all the Michaelmas Daisies, the type having fine rose-coloured flower heads, pulchellus deep blue, and atro-roseus deep rosy-red. Of the three, pulchellus is the dwarfest, being about 4 ft. or 5 ft. high.

Greenhouse Plants.—Of all the Cape Fig Marigolds, Mesembryanthemum fragrans is now the finest; it is a very dwarf sort, with large, thick, fleshy leaves resting on the surface of the soil, and large, golden-yellow, fragrant blossoms. Begonia geranioides, a South African kind, is not seen nearly so frequently as its merits deserve; its neat, round foliage sets off to good advantage the pure white flowers. B. Richardsoniana is of branching habit, and forms a neat little bush; it has peculiarly cut leaves and white flowers.

Stove Plants.—Tradescantia fuscata, a lovely little Brazilian Spider-wort, has short, broad leaves densely clothed with reddish hairs, and large, blue, shortly-stalked blossoms nestling in the rosettes of foliage.

Orchids.—Oncidium ornithorhynchum is conspicuous in a genus in which yellow is almost universal by its small and pretty rose-coloured blossoms; the colour varies in intensity and the flowers in size in different plants, some individuals bearing blossoms of good size and of a clear rose, and others smaller, much paler flowers. O. crispum is a very showy kind from the Organ Mountains, Brazil, where it is found growing on dead trees; in good specimens the flowers are large —from 1½ in. to 2 in. in diameter—and are produced in bending racemes numbering sometimes from fifty to sixty; the colour is deep brown broken up near the centre with yellow. Pholidota articulata, though more curious than pretty, deserves mention; it has strange jointed pseudo-bulbs and very numerous drooping spikes of whitish flowers.—†.

NOTES OF THE WEEK.

Tyerman's Groundsel (Senecio pulcher).—We have received from Messrs. Backhouse, of York, large and finely-coloured blossoms of this excellent border plant, showing that it succeeds in the north of England quite as well as in the south. It is a plant which, when better known, will be found in every herbaceous border, and it may be added that it lasts long in good condition in a cut state.

Cuphea Zampari.—I may state without hesitation that this is one of the most ornamental and useful of annuals. It is nearly allied to the old-fashioned C. silenoides, but it is much finer. It grows about 1½ ft. high, has numerous branches arising from the base, and when but a few inches high in early summer it begins to produce its blossoms from the axils of the small-pointed leaves, and the branches continue to lengthen and produce flowers till frosts cut them down. The flowers, which are of a rich deep purple colour bordered with a lighter hue, resemble those of an ordinary Sweet Pea, and are about the same size. They are admirably adapted for cutting, as the branches continue to lengthen and the flowers to expand for a long time when placed in water. Altogether, it is a very desirable plant, especially at this season, when most other annuals are gone, and flowers even of perennials are scarce.—W.

A Dried Palm Tree.—In the Imperial gardens at Vienna there is a fine specimen of a Date Palm, with leaves, fruit, and all in a dried state placed erect in a circular, high-roofed structure. It affords a far better notion of a Palm tree than the great majority of those grown in tubs, or even planted out in hothouses. The consistence of the leaves, fruit, stems, &c., is such that the tree will long remain in perfect preservation. This fact may be worth the notice of the curators of museums, and also of those interested with the embellishment of large rooms or buildings.

Lachenalia pallida.—Though not very showy, this Lachenalia is effective when mixed with the scarlet and yellow-flowered kinds in baskets or pans. All the Lachenalias are easily cultivated and may be used in various ways; therefore, any addition to existing kinds is acceptable to the cultivator. We lately saw the variety above alluded to flowering well in the Hale Farm Nurseries.

Oncidium Lanceanum.—This is one of the finest species of the genus, but it is somewhat difficult to keep in good condition. It, or rather a good variety of it, has been flowering finely in the East India house at Loxford Hall. Its sepals and petals are spotted with crimson, and the lip is a rich violet-purple. This plant does not thrive well in pots. It should be grown in baskets of Teak wood in a mixture of Moss and peat, plentifully intermixed with clean potsherds and lumps of charcoal. As it flowers in June, it makes a good exhibition plant; but when grown strongly it also blooms well in the autumn, and nothing can be sweeter than the perfume of its blossoms.

Haberlea rhodopensis.—I find this beautiful and rare hardy Gesneraceous plant to succeed best in partial shade and kept continually moist. It should be planted in a compost the largest part of which consists of fibry peat and sandstone grit. I have tried several modes of treatment, but the above appears to suit its requirements best. Though I have not succeeded in producing flowers, I look forward to being rewarded in the spring with the first sight of them.—W.

Eupatorium ligustrinum.—This beautiful Mexican shrub is one of the most desirable of a rather numerous set of autumn and winter-flowering plants. For outside wall decoration it forms an attractive object, producing, during summer and till late in autumn, abundance of broad clusters of pure white, feathery blooms that contrast finely with the deep green of the oval-shaped leaves. The flowers, which are very fragrant and borne on long slender stalks, are admirably adapted for cutting, a state in which they last a long time. In many gardens it is well known and appreciated for the winter decoration of the conservatory, and for this purpose young plants struck from cuttings the previous year and planted out in spring should be taken up early in autumn, potted, and afterwards retarded, if required, for the winter months. It is an old inhabitant of gardens, and is probably known under the more recently-applied names of Weinmannianum and fragrantissimum.—W.

Proposed New Park for London.—A public meeting in furtherance of a movement for providing a new park for the inhabitants of the north-western extremities of the metropolis was held on Monday last. It was explained that there was a deficiency of open spaces in the neighbourhood of the proposed park. Hyde Park or Regent's Park were, it was stated, obviously at too great a distance from Kilburn to be made a convenient recreation ground for people residing in that locality. It was further explained that the north-western portion of Paddington and the district adjoining it had a population of 100,000, chiefly composed of the working classes, to whom a park and recreation ground would prove a welcome place of resort. Resolutions were adopted affirming that the physical and moral welfare of the people rendered the duty of preserving open spaces one of urgency and moment, and expressing a hope that the adjoining parishes would give their support to the scheme.

Atraphaxis spinosa.—This curious shrub is now full of its small, pinkish blossoms in the Botanic Garden at Schönbrunn, where it is allowed to spread out by itself on the Grass, which well suits its peculiar and fragile shoots. There has long been a fine plant of it in the College Botanic Garden at Dublin.

Geonoma Seemanni.—This is a handsome Palm, well worth growing in small pots for vases or for table decoration. It is robust in habit, and its young leaves are of a rich bronze colour, a circumstance which gives it an effective appearance. It is grown in Messrs. Hooper's nursery, Twickenham.

Bryony (Bryonia dioica) in the Garden.—Modest merit is acknowledged in the case of this wild British climber in various gardens in Vienna, where quite recently it was fresh, green, and beautiful. No doubt it is chosen for its enduring verdure as well as for its graceful growth and foliage. It forms many wreaths in one of the town gardens of Vienna, and it is also trained up at the angles of large statue pedestals in the garden of Count Schwarzenberg. So trained, it looks well, and pleasantly relieves the mass of stone.

Alpine Daphnes.—In the very good collection of Alpine plants in the Belvedere Gardens, at Vienna, are included, in addition to D. Blagayana (figured in The Garden during the present year) Daphne Philipi, D. alpina, and D. buxifolia. There is evidently a group of these little Daphnes which claim a place in the select Alpine collection.

Begonia Frœbeli in Winter.—If properly treated, this Begonia forms one of the most useful of plants for blooming during the winter months. We lately saw hundreds of plants of it in Messrs. Hooper & Co.'s nursery, Twickenham, destined to serve this purpose. The bulbs were planted early in June in the open air and in light, rich soil, where they grew well and produced a limited quantity of blossom. These plants were lifted a short time ago, potted, and placed in a cool greenhouse, where they are now throwing up abundance of bright scarlet flowers, that contrast well with the large, healthy, Cineraria-like leaves with which the plants are furnished, and a good display of bloom may be expected for several months yet to come.

An Effective Group of Orchids.—This may with truth be said of a group of flowering Orchids now to be seen in Mr. Williams' nursery, Holloway. It consists of large pansful of Indian Crocuses (Pleione lagenaria) plunged in a bank of Club Mosses, edged with Grasses and backed up by Lady's-slippers and Odontoglossum grande, and flanked by well-flowered examples of Oncidium Rogersi, O. tigrinum, O. crispum, O. varicosum, and Lycaste Skinneri, the whole being overhung with fine plants of Dendrobium formosum giganteum, growing on blocks of wood and in baskets, furnished with numerous large and handsome white yellow-blotched flowers. We also noted in the same house flowering examples of D. bigibbum and its white-flowered variety, and Cattleya exoniensis superba.

Berkeley Portrait.—The portrait of this gentleman will be presented, on behalf of the subscribers, by Sir Joseph Hooker to the Linnean Society at its first meeting for the present session on November 7. The portrait will be on view at all reasonable times. Those who have not paid their subscriptions are requested to do so at once to the Treasurer, Dr. Hogg, 99, St. George's Road, Pimlico; or to the Hon. Sec. to the Committee, Dr. Masters, 41, Wellington Street, Covent Garden.

Chrysanthemums in the neighbourhood of Liverpool are very early this year; mine are a fortnight earlier than usual, and, on inspecting a few collections belonging to our principal exhibitors, I find that a good many of their best show varieties are fully out.—H. E. A.

Horticulture at the Paris Exhibition.—It would seem that English horticulturists have acquitted themselves well in Paris, judging by the number of medals which they have been awarded. Messrs. Carter & Co., High Holborn, have received five gold medals for seeds and their general collection of horticultural and agricultural produce. Messrs. Sutton & Sons, Reading, have obtained gold and silver medals for their exhibition of Grasses, models, &c. Mr. Wills, South Kensington, has won fifteen first prizes for his collection of plants, as well as the grand prize of honour for his whole exhibition.

NEW OR INTERESTING PLANTS.

Under this head it is proposed to record popular descriptions and any useful information we may be able to glean respecting new garden plants published in The Garden, originally, or in any other English or foreign periodical, or exhibited at our shows. It is intended to render it as complete an enumeration from the date of commencement, as circumstances will permit, but plants of purely botanical interest only will be merely mentioned with an indication of their nature. Old favourites re-introduced will also find a place here as well as improved varieties of known species, but varieties of recognised florists' flowers will be excluded.

Veronica Traversii.—One of the numerous shrubby species inhabiting New Zealand. Though not so showy as V. speciosa and V. salicifolia from the same country, it is a neat, compact, and attractive little evergreen shrub which produces a profusion of white flowers during the summer months. It forms a dense, spherical bush 2 ft. or more in diameter, with slender branches well clothed with small spreading leaves in four rows. The narrow leaves are of a somewhat pale green, shining on the upper surface and about 1 in. in length; flowers, snowy white, about one-third of an inch in diameter, arranged in short, dense racemes at the ends of the branches. Although this plant has been cultivated by Messrs. Veitch for at least five years, it is only the current number of the "Botanical Magazine" (plate 6390) that a coloured figure of it has appeared. It is a native of the Alps of the Middle Island (now usually called South Island) of New Zealand, from Nelson to Otago, by margins of streams up to an elevation of 5500 ft., and will, therefore, be perfectly hardy in the west of England and Ireland. For several years it has stood uninjured at Kew, but a severe winter would, doubtless, kill it outright or cut it to the ground in the neighbourhood of London.

Aristolochia trilobata.—This singular species is not new in gardens, but it is figured in the "Botanical Magazine" (plate 6387) for the first time in an English publication. Two species, Sir Joseph Hooker states, of Aristolochia from South America, characterised by the wonderful tail at the tip of the perianth and curious spurs at its base, have been cultivated in England and confounded with a third (A. caudata) which has not hitherto been introduced. These are, first, the old A. trilobata of Linnæus's first edition of the "Species Plantarum;" secondly, A. macroura (Gomez), a Brazilian species figured in the "Botanical Register" (plate 1399) under the name of A. trilobata, and under that of A. caudata at plate 1453 of the same work, and at plate 3769 of the "Botanical Magazine." The true A. caudata is a small-flowered species with no spurs at the base of the perianth. Aristolochia trilobata is a very slender climber with three-lobed, stalked leaves of a bronze green, relieved by the reddish tinge of the principal nerves; those on the flowering branch figured are about 2 in. across. The flowers are borne on stalks rather longer than the leaves, and are of a yellowish green traversed by red lines, the mouth bristly and spotted with a brighter red, and the long tail of a rich brown; altogether, the perianth of the flower is 8 in. or more in length whereof one-half at least is attenuated in a narrow tail hanging over the mouth of the tubular portion, which is suddenly bent back upon itself in the middle. This species is a native of the West Indies and the north-eastern part of South America, and requires hothouse treatment. It deserves a place where there is not sufficient space for the more rampant but more showy species, such as A. Goldieana.

Cœlogyne (Pleione) Hookeriana.—A charming little Orchid, flowered by Mr. Elwes, who imported the plant from Sikkim, and figured in the "Botanical Magazine" (plate 6388). It is singular among the Pleiones in producing leaves and flowers at the same time, the leaves subtending the solitary flowers much as the leaves of the Lily of the Valley do the spikes of flowers Whole plant about 4 in. high; pseudo-bulbs naked, not covered with a network; leaves sheathing at the base and scarcely so high as the flowers; flowers rosy-purple, except the convolute labellum, which is white with seven brownish crests on the terminal lobe and yellow within. A native of the Himalaya Mountains at an elevation of 7000 ft. to 8000 ft.

Hedysarum Mackenzii.—A showy herb of the same group of the Leguminosæ as the Sainfoin, of which it has much the habit and foliage, but it is not so robust a plant, having slender straggling branches. The flowers are of a rich rosy-red, passing into crimson. They are very numerous, and borne in spikes from 6 in. to 9 in. long. This plant was first discovered by Sir John Richardson during Franklin's arduous journey to the shores of the American Polar Sea in 1823, which it inhabits; and it has since been found in the Rocky Mountains, as far south as Utah and Colorado, and in Eastern Siberia. Hedysarum Mackenzii flowers freely in the herbaceous ground at Kew, and is figured in the "Botanical Magazine," plate 6386.

The remaining plants figured in the current number of the same publication are Stachys Maweana (plate 6389), a tall Dead Nettle, with silvery, hoary foliage, and pale yellow flowers with purple blotches on the lower lip, and deep red stamens. A native of Morocco; collected and cultivated by Mr. George Maw, of Benthall Hall, Broseley. Antirrhinum hispanicum (plate 6391), a dwarf annual Snapdragon from Spain, having pink and white flowers with a yellow crest. It is not a plant of value for ornamental purposes.

W. B. Hemsley.

Continuous-blooming Sweet Peas.—We have two short rows of Sweet Peas that have been in bloom since the beginning of July; they are still flowering profusely, and to all appearance will do so till frost cuts them down. I attribute their continued flowering to our having the seed-pods picked off regularly every week, and to giving the roots a good soaking of manure water occasionally.—W. W., *Eaglehurst.*

Saxifraga ligulata.—Now is the time to lift and pot this fine old Nepalese Saxifrage, and a finer plant for conservatory decoration in winter, especially when in the form of large specimens, could not be found. Its bold, round leaves and large, dense spikes of sweet-scented, pink blooms render it very attractive, and under glass they retain their beauty so much longer than when fully exposed in borders or rockwork. The later-flowering and equally well known S. crassifolia and its variety cordifolia are also very suitable for similar purposes, and they should also soon be lifted and potted and placed in cold frames, as they flower better so treated than if the operation be deferred till spring.—W.

Autumnal Tints.—I never recollect seeing these so well developed as they are this season. Horse Chestnuts are masses of bronze and gold, which, when in close proximity to Elms or Yews, are simply unique. Lime, Birch, and Ash also revel in green and gold; Oaks, as a rule, are still green. The different kinds of Acers, but especially A. rubrum, ought to be planted largely on the outskirts of woods, associated with Laburnums, Mountain Ash, and Thorns; the latter consisting of some of the large-leaved kinds, such as Cratægus Douglasi; these I would recommend being planted in groups sufficiently large to be distinguishable from a distance; in shrubberies single specimens will have the desired effect. The common flowering Currant, too, at this season is most noticeable, the outside of the leaf being quite red and the centre green. The Sumach (Rhus glabra) is another grand plant, its fine, large leaves assuming the most varied tints of gold and bronze. Cotoneaster Simmonsi is also a very distinct and pleasing shrub, being erect in habit, and its leaves being neatly laced with crimson; to this should likewise be added its bright coral berries, which amongst Evergreens are very effective. Veitch's Virginian Creeper, too, with us is superb; this year, the majority of its leaves being fiery red dashed with bronze, and as it retains its foliage much longer than the common variety, it is doubly valuable, and, besides, it requires no nailing. The black fruit of the Japanese Honeysuckle, and the faint crimson hue of its beautifully-veined green and gold leaves, likewise form attractions not to be overlooked. Both these plants are admirably suited for the decoration of the dinner-table.—A. Hossack, *Ragley, Alcester.*

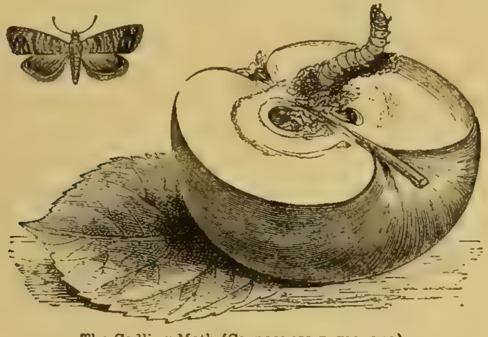
Chrysanthemums at St. John's Wood.—In a collection of Chrysanthemums in the Wellington Nursery there are some new kinds which are well worth notice. Orphée is an excellent sort, belonging to the Japanese section, with large, ragged flowers of a fiery crimson, the centre petals being yellow. Le Negre is one of the most striking kinds in the whole collection; it is a Japanese variety of good habit and a very free bloomer; its flowers are flame-coloured, with a rich golden centre, and, associated with the swan-white, cushion-like blossoms of Elaine, are remarkably effective. La Frisure is a fine new Japanese kind of excellent habit; it is represented here by standard plants having clean stems from 12 in. to 18 in. long, surmounted by large branching heads of delicate blush or pink blossoms, as many as five being borne on each branch. As a market plant this would doubtless be a most desirable kind on account of its dwarf habit and excellent blooming qualities. Neat little plants, consisting of five or six shoots, might with little trouble be got into 6-in. pots, and if well furnished with foliage down to their bases and supplied with numerous large, graceful blossoms, would be very desirable. Fleur Perfaite is also a fine Japanese variety, having large, rose-magenta blossoms. Amarantine is a Pompone kind, with well-formed, smooth-petalled flowers of a bright magenta, which are, moreover, sweetly scented. Rosa Bonheur is another excellent Japanese flower of a rosy-purple colour, very showy and distinct. There are also in this collection many well-flowered plants of older kinds, all of which are worth inspection.

GARDEN DESTROYERS.

THE CODLING MOTH.

(CARPOCAPSA POMONANA.)

There are few persons to whom the grub of this little moth is unknown, as it is found only too commonly in Apples and Pears, and at times in such abundance as to seriously injure the crop. Like many insects which are injurious to the plants in our gardens, it is a very difficult one to keep in check, and, unfortunately, its natural enemies are not very numerous. The grubs in the fruit are safe from the attacks of birds and insects which would otherwise destroy them; but the chrysalides, which are generally found on the stems of the trees, are, doubtless, often a prey to ichneumons and other nearly-allied parasitic insects. Many of the moths are killed by birds and bats, and if the weather be cold and damp about the time they make their first appearance many, no doubt, perish before they have laid their eggs. As the fruit containing grubs generally ripens and falls some time before the sound portion of the crop, it should be collected and destroyed, for each Apple or Pear is nearly sure to contain a grub. In gardens where there are espaliers or dwarf trees, the fruit on them should be carefully looked over from time to time, particularly in May and June, and any showing signs of a grub being within should be gathered and destroyed; these may be known by their having a black or reddish-brown spot on them, which is the entrance to the gallery the grub is forming. In the spring any rough loose bark on the stems should be scraped off, and any chrysalides which may be found destroyed. The moths should be killed whenever they are detected. They, however, in common with all moths, are very difficult to find in the daytime, as they generally select as a resting place some spot where they are most likely to escape observation and which is just of the same colour as themselves. They may be caught when on the wing of an evening with a net, but the result would not, I imagine, repay the trouble. The moth makes its appearance in the month of May, and shortly afterwards begins to lay its eggs, generally depositing them in the eyes of the Apples or in the hollows near the stalk, usually selecting the firmer kinds of fruit. In favourable weather the grubs are hatched in the course of a few days, and immediately begin to eat their way into the fruit and take up their position near the core, eating the flesh of the Apple and making a connecting gallery with the outer world; this allows a little air to reach the grub, and also enables it to get rid of some of its droppings, which are found in great quantities in any worm-eaten Apple. The fruit continues to grow in spite of the grub, and, as before stated, falls often with the appearance of being ripe long before the uninjured fruit. The grub becomes fully grown in about three weeks or a month (in June or July), and then leaves the fruit, whether it has fallen or not, and chooses some sheltered place on the stem of the tree or beneath the surface of the ground, and spins a cocoon like a silkworm round itself, in which it changes into a chrysalis. In a few days the moth comes out and commences to lay its eggs on the fruit, so that in July, August, and even September, the fruit is attacked by a second brood of grubs; this shows the desirability of the Apple grower taking every precaution to destroy the grubs of the first brood, as on the number of those which become moths depends in a great measure the amount of damage caused by the second brood. The moths from this brood do not appear until the following spring, the insect remaining during the winter in the chrysalis state. The moth measures about 8-10ths of an inch across the expanded wings; the front wings are pale grey, with curved, transverse, darker fine lines and bands; on the lower and outer angle of each there is a large reddish-brown spot surrounded by a golden band; the lower wings are of a brownish-orange; the thorax and body are brownish-grey. The grubs are about ½ in. long when fully grown, and are fat and fleshy; they vary in colour from a yellowish-white to almost flesh colour. The head and a large spot on the first joint of the body are black or very dark brown, and on each joint are several small blackish tubercles, from which grow a few fine hairs. They have fourteen joints, not including the head on each of the three first, as well as on the sixth, seventh, eighth, and ninth, and, last, there is a pair of legs. The cocoon is oval, and about 6-10ths of an inch long, whitish in colour, and when found on the stem of the tree small pieces of the bark are mixed with the web of which it is formed. Within this cocoon will be found the reddish-brown chrysalis. S. G. S.


The Codling Moth (Carpocapsa pomonana).

Paraffin Oil an Insecticide.—I am able to verify all "J. S. W." (p. 340) says respecting this matter. Having a large Camellia, 10 ft. high, covered with white scale, I had the whole tree painted with paraffin oil, diluted to about the same strength "J. S. W." recommends, but we were very careful not to touch the dormant buds; the consequence was, the tree was cleared of scale and made fine growth the same season. We applied the paraffin with a camel's-hair brush in the end of February, as soon as the flowering was over, and before the tree had made any new growth. Being in the show house we left a little air on for a few nights, in case the paraffin might affect more tender plants. I did not syringe it off for some days. I then put the tree in a Vinery that was started, where it had the benefit of a good syringing twice a day. I can with confidence recommend paraffin for fruit trees in the open air, but one must be careful not to touch the buds. I painted some espalier Pear trees affected by American blight, and the trees never looked so healthy as they did the next season.—T. Elcome, *Aquarium Terrace, Crystal Palace.*

Ailantus as a Fine-foliaged Standard.—This is one of the trees we have often spoken of in The Garden as suitable for planting and cutting down every year so as to get a fine growth of leaves from a single stem. A still better use is made of it in the great courtyard of the palace at Schönbrunn. The long wings to the right and left of this immense gravelled space are saved from a too glaring barrenness by a single line of Ailantus planted in front of them and treated in a peculiarly successful way. They have clear stems about 10 ft. high, and heads about 15 ft. in diameter, the leaves being frequently 4 ft. long. This result is brought about by cutting the heads in boldly every year. In the middle of October the leaves are quite green. The trees are not allowed by this means to grow so high as to obscure the building, and their effect is much better than that of the clipped Lime and other trees so often used. The trees are on a narrow strip of Grass, and have a well-furnished Thuja between each pair of Ailantus.

Removing Fallen Leaves.—At this season of the year, when fallen leaves give an untidy appearance to even the best-kept gardens, it is well to bear in mind that they are the provision made by Nature for restoring to the earth the food that has been extracted from it during the growing season, and that where it is imperative that the leaves should be removed, some means of restoring an equivalent amount of nutriment by artificial means should be resorted to; otherwise, we shall not have far to seek for the reason why trees thus treated fail in health long before those in more neglected positions. Where many deciduous trees exist the walks at this season need constant attention, for if the leaves get trodden on them, they spoil the gravel, and, consequently entail more labour than their frequent removal would do; but, in shrubberies or beds of evergreens, it is best to permit the leaves to remain until they are all down, and then only remove such of them as disfigure the outline or margin, substituting some manure or leaf-soil for them. Digging amongst the roots of trees and shrubs should be practised as little as possible, as the best feeding roots are those near the surface, where there is anything in the shape of food, such as decayed leaves, afforded them. That digging checks rather than promotes their health and well-being there can be no doubt, and fallen leaves, though considered an eyesore by many, are of much importance to the trees themselves.—J. Groom.

THE FLOWER GARDEN.

TUBEROUS-ROOTED BEGONIAS.

The following remarks on these Begonias may be of use to those who are at present comparatively unacquainted with their successful cultivation. Let us therefore begin with raising them from seed. The best time to sow is in July or August, as this gives time enough to enable the young plants to form small tubers before winter sets in, a circumstance which gives so much of a start in spring as to insure that most of the plants thus raised will come into bloom before the close of the next season, which, in the case of spring-sown plants, does not always occur. The best plan for getting the seed up is to prepare a sufficient number of pots (6-in. ones) with drainage, rough compost, and then finer soil, which should be made firm to within ½ in. or ¾ in. of the rim of the pot. Water well with scalding water, and when the mould has cooled sow the seed and place the pots in a moderately-heated house in a light position, where they can be shaded from the sun for a few hours during the middle of the day. Do not cover them with glass or anything else, as if the seed is good it will commence to germinate in a few days after sowing, and, as these plants are very impatient of confinement, anything approaching coddling must be avoided. On the contrary, from the very first allow air to circulate freely around them, keeping the pots moist by sprinkling water amongst them. As the seed is so very small great care is needed during the earlier stages of development. As soon as the seedlings are fairly up, and before they begin to crowd each other, they should be transferred to other pots or pans, prepared as directed, for the seed, omitting the watering. They should be shifted in small patches, being too small to handle singly, and should be still kept in the same house, for these Begonias will endure and require much more heat at this early stage than at any future period of their growth. They will now begin to grow rapidly, and soon cease to require shade; they will, on the contrary, require a freer circulation of air, and in a short time they should be placed singly in other pots or pans, in which they may remain if in autumn, and be grown on as long as they will continue to do so. Many, indeed, will not go to rest at all, or, at least, not before the beginning of the new year. They must not be allowed to become dust dry, but must be kept quiet until they start again in spring, when they may be potted off singly. After that their progress will be most rapid, and they will soon require a shift from 2½-in. pots to 6-in. ones, and soon afterwards many will need an 8-in. or 9-in. pot, in which they may continue during the season; or they may be placed in small pots in a cool frame to harden off and grow slowly until the weather is sufficiently warm, when they should be planted out-of-doors. Of course, in the case of spring-sown seedlings, the growth should be continuous, but, so far as potting is concerned, the same kind of treatment would be necessary.

A good compost for these Begonias is fibry loam, with a liberal mixture of leaf-mould (not too much decayed) and some sand. The best results which I have obtained were with half-decayed Couch Grass and other weeds, gathered from sandy uplands, and half-decayed leaf-mould used in a very rough state; in fact, I usually shake out most of the finer particles. This contains a good deal of food, and keeps them for a long time in good condition. They do not succeed well in fine close soil; they dislike peat, and they never do well in rotten manure under pot culture; whereas, on the contrary, when planted out-of-doors they revel in it, as they do also in vegetable refuse, or anything rich in humus. In fact, the soil for outdoor culture can scarcely be too rich. No specific time for planting out can be laid down; every one must be guided by the temperature and conditions of the locality in which they reside. For these Begonias I never use liquid manure of any sort, as I find that if the soil be good none is required.

As to position in the open air, some recommend planting in full sunshine, but, according to my experience, they will not endure the full force of a June or July sun, at least, during the hottest part of the day; therefore, a position slightly shaded during that part of the day, or a little artificial shade is best. It should be mentioned that the light-coloured sorts —white, yellow, buff, and orange tints—require more shade than the high-coloured ones do, as their flowers are liable to burn at the edges if fully exposed. After July is over and the nights begin to grow longer and cooler, they seem to enjoy the fullest exposure, and then grow with great rapidity. It is astonishing how hardy these Begonias are, and persons seeing them for the first time planted out and doing well are struck with their beauty. As evidence of their powers of endurance I may mention that a large number of them here (close upon 10,000) planted out were exposed to the full force of the late equinoctial gale, accompanied by a deluge of rain, and yet were unhurt. The fact of their growing close together would account in some measure for their not being dashed to pieces; but still their rain-enduring capabilities are wonderful. After a deluge they appear fresher than ever, while beds of Pelargoniums close by are quite flowerless. Again, a sharp frost occurred here on the morning of October 1; Amarantuses were killed, Heliotropes injured, Vegetable Marrows blackened, and other plants were more or less hurt, but after the most careful scrutiny not the smallest sign of injury could be found on the Begonias, and this frost followed a day and night of heavy rain.

These Begonias are easily propagated by means of cuttings, and the earlier in the season they are put in the better, so as to allow them to mature good-sized tubers before going to rest. Cuttings with one, two, or three joints are large enough; they should be allowed to dry for a short time, and then be inserted in damp sand in a little warmth, when they will quickly root. Some of the best sorts increase very slowly; in fact, I have had some choice seedlings for two years, and never get a single cutting from them. Such kinds must ever remain scarce.

These Begonias should be allowed their own time to go to rest when grown in pots, and those planted out may be lifted when it is considered unsafe to leave them any longer in the open air. They should be put in pots, when they will continue to bloom in the greenhouse for some time longer. As soon as the stems have fallen off they should be stored away, still in their pots, in some situation where they will not become dust dry, and where they will just be secure from frost and no more. They might be packed away under a stage or even in a cellar, but where room can be spared I find the best of all ways is to place the pots on the cool earth in a house and cover them up with Cocoa-nut fibre refuse or sawdust, or some similar material. Thus circumstanced they may remain until they start into growth, naturally in the spring. Where they are grown in very large numbers, I find it quite easy and safe to reduce in bulk most of the earth about them and pack them closely together in shallow boxes, filling the interstices with some of the soil shaken off, and using one, two, or three layers until the box is full and level. I then place these boxes one over the other under a greenhouse stage, taking care that they do not get watered from above, or in a frost-proof shed. In this way they remain until they start into growth naturally in the spring. I attach much importance to this latter point, as nothing is gained whatever by forcing them into a state of premature growth. If left to themselves they come away much stronger, and their aftergrowth is so rapid as to quickly make up for any fancied loss of time. The best time to repot them is just as they are beginning to grow. Shake the old soil completely away from them. I repot them in fresh pots just large enough to hold the roots, shifting as may be necessary. I am convinced that any one with a cold frame and sufficient covering to exclude frost may grow and keep these beautiful plants safely over winter; in fact, some of my brightest results have been obtained in cold frames with the lights tilted on their sides, so as to allow the very fullest circulation of air, the bare covering of glass being sufficient protection, and in this manner plants may be grown, if necessary, for exhibition to any size. It cannot be too strongly urged that they are not by any means stove or even warm greenhouse plants, but plants which enjoy plenty of light and the freest possible circulation of air. T. SMITH.

Newry.

Phlomis armeniaca.—There is always a distinction belonging to these plants which makes them worthy of a place in collections even when their beauty is not of the showy order. The above is a very dwarf species with neat silvery leaves. It is so different in habit from the rest of the species, that it is well fitted for association with dwarf plants on the rock garden.—V.

LILY GROWING.

Since the introduction of that grandest of all Lilies—Lilium auratum—much attention has been devoted to this beautiful class of plants, which, till then, were comparatively neglected; but besides the sensation this created in the horticultural world, The Garden has done much to bring them under public notice. From the thousands and tens of thousands of the above that have been imported, and are still being brought over, one would think that the country was well-nigh stocked with them, but as such does not appear to be the case, their comparative scarcity must be owing to many being lost through planting in either soils or situations that are unsuitable to their growth. Of the many Lilies I have to deal with none are more particular in these respects than the above named, the bulbs dwindling away and disappearing in the most mysterious manner possible. Happening to have them in different situations, I soon found out the cause of this, or, at least, to me, what appeared to account for it—dryness at the roots, arising from the plants growing in an open, exposed position, where the sun shone with full force on the ground around them. In every instance where this occurred the stems were always shorter, and came considerably weaker than others in soil that sloped to the north, or received shade from such shrubs as Rhododendrons, whose roots do not ramble far to rob the ground of its moisture. It would be interesting, as well as profitable, to Lily growers to know exactly under what conditions L. auratum and others are found growing in their native habitat, that they might, in planting, shape their course accordingly. The formation of the stems, and the great length of most of them with their sparse foliage would lead one to infer that Nature has adapted them to find their way through amongst scrub or low-lying herbage of some kind, clear of which they can raise their magnificent heads of bloom. Be this as it may, I have always found that they do much the best in a situatian that accords in some measure with conditions similar to those just mentioned, and that partial shade and moderately moist, cool soil are the principal essentials to their successful cultivation. If we examine the lower part of the stem of a Lily we shall find that when in a young state they begin to emit a quantity of roots around their base, which roots, of course, are intended to forage for them and afford the requisite support to the flowers. It must be obvious, therefore, if these feeders be dried up, or suffer from lack of moisture, that the tops have to draw the whole of their sustenance from the bulbs, which tax on their energies prevents the formation of others to supply their places the following year. This would necessarily occur with any growing where the surface soil became parched from the heat of the sun, and therefore any that are at all exposed should have a mulching of some non-conducting material or other, such as half-rotten leaves or very mild hotbed manure, so as to intercept evaporation. This, with a good watering or two during the active growing season, and when the blooms are showing, will be found of the greatest assistance to them.

Although Lilies are such moisture-loving plants at a certain time of the year, anything approaching a wet, stagnant condition of the soil is fatal to them; and more especially is this the case during winter, when they are in a semi-dormant state, as then they take up water slowly. The best way before planting is to thoroughly trench the ground by breaking it up to a good depth, and when doing so, to work in plenty of peat if it can be readily got, or if not, a liberal dressing of leaf-mould in lieu of it. A bed or border so prepared will grow any of the kinds well, but with many of them it is a great help if holes are dug out where the bulbs are to be placed, and filled in with rough, fibry peat and sharp, clean sand, a mixture that is highly congenial to them and keeps them clean and free from decay. In all cases where peat is not used the sand should not be omitted, as a handful or two of it placed around each cuts off their contact with the moist earth that would otherwise press too closely about them. Where it is intended to grow Lilies in shrubbery or herbaceous borders, in isolated patches or groups, the same kind of preparation may readily be carried out, only the holes dug for them in that case should be made to hold at least a bushel of the mixture above referred to, as then their well-doing will be a matter of certainty. The only natural soil I have ever seen them succeed in in a really satisfactory manner is a greasy, moist sand, in which they grow with great vigour and increase at a rapid rate compared with what they do when not so circumstanced. I have noticed that most of the imported bulbs of L. auratum are coated with the same kind of soil, thus showing that in Japan, where they must grow in immense quantities, the soil they are found in is of a similar nature. As regards the time of planting, the earlier it is done in the autumn after the leaves and stems are ripe the better, as immediately these die down large fleshy roots at the base of the bulbs begin to form, and it is almost impossible to interfere with them later on without bruising or damaging these to some considerable extent. Such as come from a distance or have been long out of the ground are destitute of these feeders, and every day's delay in planting detracts from their strength, as they are then living, as it were, on themselves, instead of drawing their supplies from the soil. The proper depth at which to place the bulbs is about 6 in. below the surface, or even a little more than that for the large, strong growers, that require so much extra moisture. In potting, however, it is much the best way not to cover them deeply, but to leave space to top-dress with large lumps of soil as the shoots progress, and these they seize hold of greedily and derive additional strength therefrom. Potting, like planting, should be done early, and the ball disturbed as little as possible, at least that portion of it below the base of the bulbs in which the large fleshy roots are embedded. That on the top will break away with the old stems and leave the crowns bare, among which some silver sand should be scattered so as to work in and fill up the interstices among the scales. For pot culture there is nothing equal to a mixture of rough, fibry peat and loam in about equal proportions, through which the roots of the Lilies run easily and water percolates readily. Any cold frame where there is a firm, hard floor of coal ashes to place them on answers admirably for their winter quarters, as there they come gradually on and are in every way better than they would be in a house far from the light and air. S. D.

—— I am a novice in Lily culture, and am trying to learn. I confess I am puzzled by much that "Dunedin" writes. Does he mean to say that the stem roots are of no service to the growth and development of the flower stem? If not, what do they feed? They do not reproduce the plant, like the suckers of Roses and other trees with which he compares them. Again, I cannot agree that a large Lily bulb is no better than a small one. If to obtain a single flower stem is the object, I grant that he may be right; but experience shows me that a large Lily bulb, if planted in a healthy condition, will produce three or four stems, and if lifted next year will have divided into three or four bulbs; a small bulb will produce one stem, and have grown at the same time into one larger bulb. In this way we gain a year's growth by buying a large bulb. Also, I am at a loss to know how the reproduction of Lily bulbs, on which "Dunedin" lays so much stress, differs in its main facts from the reproduction of all other bulbs. This takes place, it is true, in various ways. The Hyacinth, the Narcissus, the Tulip, the Snowdrop, and others, like the Lily, are reproduced occupying nearly the same space as the old bulb; the Crocus, the Gladiolus, and the Ixia produce their new bulbs entirely external to the old bulb, but adhering to it. Others, as the Tritonia aurea, produce them at some distance, sometimes as much as 18 in. from the old bulb, and connected with it by suckers, but in all cases the old bulb inevitably perishes, and the new bulb is formed in layers or scales, which are concentric either round the germ or stalk of this year or the germ of next year, yet we speak of the Crocuses, the Gladioli, or the Daffodils "I bought last year," not the bulbs which have succeeded to the Crocuses, &c.; I bought last year, as some of your correspondents particularly do in talking of Lilies. The experienced in bulb growing know that the success of a flowering bulb depends in a great measure on the development of the new bulb in the previous season's growth. C. W. Dod.

TRANSPLANTING LILIES.

I am glad to see that Mr. Wilson has (p. 371) corrected his note (p. 332) by substituting "most" for "not," as I felt at a loss to guess what he meant. I now entirely agree with him, that Lily bulbs "should be moved when most at rest," and I have expressed this opinion in all my writings. So lately even as October 5 (p. 304), I said, "When the parent plant is beginning to bloom is the time when there is the least motion in the new bulb, for the roots alone may be said to be moving; and until they move with greater activity, they cannot draw from the soil the nourishment necessary to fill the cells and swell out the bulk of the new bulb." This, then, is the time when the new bulbs are "most" at rest; and, as I said, in answer to Mr. Uphill (p. 370), "I did not even wait (in the cases of L. speciosum and L. auratum) until the fading flowers had all fallen, so much value do I place on the new bulbs being allowed to continue their growth without the chance of a serious check." Agreeing, as we do, thus far—that the best time to move is when the bulbs are most at rest—another question seems to force itself on our attention, and that is: How can Mr. Wilson reconcile his correction with the introduction to his note? He begins by saying, "Some of your correspondents ask as to the best time for removing Lilies; I think the safest guide is the appearance of the stems. When they begin to change colour and show that the growth is checked is the time when the old roots have done their work, and the new ones just showing themselves." There is certainly something radically wrong in this statement. In the first place, the "appearance of the stems" can be no guide whatever, for they often keep green for many weeks after the new bulbs are most at rest;" and, in fact, after the new bulbs have sent down very long roots. Lift a bulb and look at it. As to the "change of colour showing that the growth is checked," this is a mistake, for the growth in the new bulb is never checked, unless it be moved at an improper time. As to that being "the time when the old roots have done their work," this is also a mistake, as the fading of the flowers themselves is the only true sign that the roots have done their work. Lift a bulb and look at them. And as to "the new roots just showing themselves" at this time, this is a very great mistake, for the new roots of the new bulb begin to show themselves some weeks before the parent bulbs begin to bloom. Lift bulbs and examine them, for no mere theory should be our guide. DUNEDIN.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Irises.—In a public square in Vienna there is a long series of small beds of various Irises planted within a few feet of and following the line of a shrubbery. The effect is very good. The plants in small circles on the turf have a better chance of growth than if within or on the edge of the shrubbery. At some little distance the foliage of the Irises (the beds are only a few feet apart) breaks the hard line of the edge of the plantation, and it may be imagined that the flowers look well seen against the green. The plan might be carried out in the more retired portions of the pleasure ground.—V.

Lobelia fulgens.—Groups of this old-fashioned plant now make a fine display in Mr. Ware's nursery at Tottenham, where, grown in deep, rich soil, they thrive luxuriantly and yield large spikes of brilliant blossoms. Before all the flowers are expanded, however, it is probable they will be cut down by frost, and this suggests the idea that were such plants lifted just before their flowers commenced to open, and planted in groups in large pots, a brilliant display might by that means be obtained in November in the conservatory, where, intermixed with white Camellias and other plants then in flower, they would be shown off to good advantage, and produce a striking effect.—S.

Conspicuous Flowers in the Herbaceous Border in October.—These in our cold district consist principally of the Michaelmas Daisy (blue, pink, and red, and the old pale blue sort, which hereabouts this season is quite conspicuous and striking, owing, probably, to the favourable autumn), Anemone japonica (white and red), Sedum Fabaria (a pretty succulent), late Phloxes, Verbena venosa (still flowering profusely), Tritoma, and the old pot Marigold, which is still as bright and yellow as at midsummer. On the same border we have many fine blooms of Gloire de Dijon, Souvenir de Malmaison, and La France Roses, which three, if the weather be ordinarily open here in our high latitude, continue to flower till late in the winter. Last winter we gathered a number of really fine half-blown buds of La France in the middle of January.—J. S.

Undergrowth for Fuchsias.—May I suggest that the golden variegated Periwinkle would make a handsomer undergrowth for Fuchsias than Ivy? It would not smother the Fuchsias, and would protect the stools during winter equally well as Ivy. Snowdrops on this Periwinkle have a fine appearance; and it is a good addition to the bed in which they are growing. I am much interested in the subject of permanent beds of hardy plants and flowers.—MRS. L.

Fuchsias as Bedding Plants.—It appears that the Fuchsia is now attracting attention as a bedding plant, a circumstance not so much to be wondered at as the fact of its having been so seldom used for that purpose. There is here a line upwards of 100 yards in length, in front of a low wall, of a white-corolla'd variety named Madame Cornellissen, which has been planted some seven or eight years. It has never failed to bloom very freely, and, consequently, it is very much admired. Even at the present time (third week of October) it is in full beauty, and if the weather keeps moderately mild, it will continue in that condition for some time yet to come, as a slight amount of frost does not greatly affect it. When the stalks are fairly killed down by frost they are cut off close to the soil; about 2 in. of cinder ashes are spread over the roots, and these are not removed until the young shoots begin to grow through them. This line or hedge of Fuchsias was first formed by planting rooted cuttings from store pots which had been inserted the previous autumn, but which had not been potted off singly. There is also a bed here of another variety known as Corallina, which has been still longer in existence. It receives no protection further than a slight mulching of rotted manure occasionally; and, nevertheless, it continues to bloom each season as beautifully as ever. There are also numerous isolated bushes of the old F. gracilis in front of shrubbery borders which receive no protection whatever; also a dwarf-growing variety apparently of F. gracilis, named Tom Thumb, which forms a pretty and easily-managed bedding plant.—P. GRIEVE, *Culford, Bury St. Edmunds.*

—— There is nothing, in my opinion, better suited for the flower garden than Fuchsias, either planted out singly or massed in beds. I have frequently had them planted close to Roses, using the Rose as a support for them; this obviates the nakedness of the Rose stem, besides affording an abundance of bloom. When at Court Garden, Great Marlow, our Fuchsia bed was a great favourite. This consisted of our old plants that had been grown in pots for indoor purposes. They were wintered in an archway under the conservatory in the dark, and gave us no trouble, except giving them a drop of water now and then, to keep them from getting dust dry. About February they were brought out, pruned, potted, and placed along the back of a Vinery, when the damping down and syringing commenced. Here the Fuchsias soon began to grow rapidly. In April they were removed to a cool orchard house, where they remained until planted out. Plenty of manure and other water was given them, and they soon grew into large specimens. A bed of this kind is no mean feature in front of a drawing-room window. They gave us no more trouble than a common Pelargonium, and were not so easily injured by wet, for the more rain the better Fuchsias thrive, and no amount of sunshine will affect them, provided they are well supplied with water.—D. S. GILLETT.

Pentstemons for Cut Flowers.—As border plants these are invaluable on account of their brilliant colour and continuous habit of blooming; lasting, as they do, gay until very late in autumn, they are extremely valuable for supplying the flower basket with brilliant spikes of colour when the more tender subjects in the garden are cut off by early frosts. I am pleased to find that they are becoming again as popular as their merits deserve.—J. GROOM.

Phloxes on Turf.—Among the various plants placed on the turf in groups in German gardens, Phloxes are not the least fitting for the plan. Their brilliant colours and good habit when well grown make them look peculiarly happy when so treated. Of course the ground must be as well prepared for them as it is in ordinary cases. Much will also depend on the taste of the person who disposes of the group on the Grass; its distance from the wall and from other objects have to be considered. This kind of flower gardening is not quite so easy apparently to some people as planting in lines and circles, but, notwithstanding, it is the true way onwards and has in itself endless and great capacity for garden embellishment.

Close-growing Plants for a Wall.—Those who wish to cover a wall with plants that require no training or nailing whatever will find the following to suit their purpose, viz.: Ivy—Hedera pulchella marginata (silver-leaved), Hedera aurea densa (golden), and Ampelopsis Veitchi. These three cover the surface of the wall evenly as they grow, and lie as close to the stone almost as if they were pasted on, and are at the same time very pretty. The Ivies show up brightly in their gold and silver variegation during winter and spring, and the Ampelopsis is successively bright green, dark chocolate, and crimson from May till Christmas, or later. This plant on a south wall here did not shed its foliage last winter till the middle of January. If these be planted in a tolerably good soil they will grow rapidly and need no further attention. There are other Ivies nearly as good, but these are amongst the best, habit and colour of the foliage considered. As a berried plant the Cotoneaster Simmonsi may be added to the list. It also grows very flat and close to the wall, but wants just a nail and a shred here and there to keep the shoots in their places.—J. S.

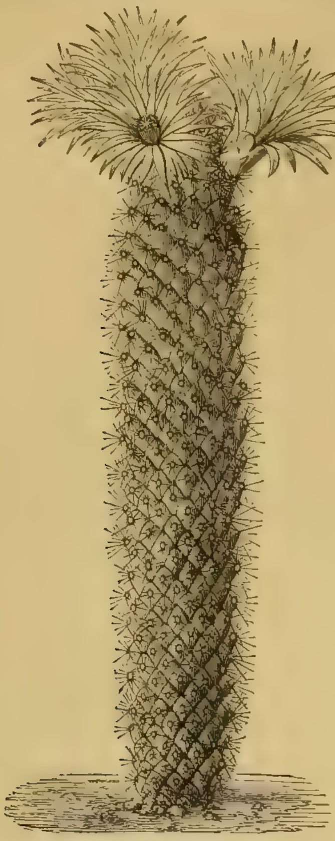
Standard Double and Single Pelargoniums for the Flower Garden.—These look best when grown from 2 ft. to 3 ft. high, and as much through for the centre of large beds or dotted about in nooks on the lawn as single specimens, which at a distance look like standard Roses. Any neglected plant can be trimmed up as a standard, and will soon make a fine head. Single varieties grafted upon double kinds will make fair-sized heads in one season. I have tried Vesuvius grafted upon double varieties, and found it to succeed admirably. I put on a kind of whip-graft in April, and by the end of the season it measured fully 15 in. in diameter. They may either be budded or grafted, but with me, where budded, the union was not so complete as where grafted. By this system several varieties can be had on one stock. I think standards look better when placed, or rather sunk, in the Grass singly than where several plants are crowded together.—D. GILLETT, *The Heath, Weybridge.*

THE INDOOR GARDEN.

MAMMILLARIA ERECTA.

As its specific name implies, this is an erect, narrow-growing plant, which attains a height of from 12 in. to 18 in. Its spines, which are yellow, are in whorls of from eight to twelve, the central one being of the same length as the others. So many of this group have yellow spines, that I cannot at all times distinguish them; M. clava and Schlectendalli I believe to be only variations of one species. They have yellow flowers, and are near relations of the Echinocacti. J. Croucher.

Sudbury House, Hammersmith.



Mammillaria erecta.

BALSAMS IN POTS AND OUT OF DOORS.

Though classed as a florist flower, the Balsam has not yet been taken under the protecting wing of the florist so-called; and what excellencies it possesses are due, not to the laws and rules laid down by straight-laced florists, but rather to the free and unfettered action of seed growers, who have ever been selecting the best, and now see their efforts rewarded in the existence amongst us of the best and most varied strains of this charming flower to be found anywhere. Even horticultural exhibitions have done little for the Balsam, as at any such plants of it are seldom seen, or, if any be present, rarely are they such as do justice to the merits of a good strain. Perhaps this defect of quality may have had something to do with the comparative neglect with which horticultural societies have treated the Balsam of late, as prizes are now seldom offered and good specimens are more seldom seen. And yet the Balsam is a plant singularly easy to grow and singularly beautiful when well grown, and if those who profess to be good cultivators of it would, during the month of August, visit such a collection in pots as may then be seen at the Messrs. Smith's at Dulwich, at Messrs. Carter's at Forest Hill, at Mr. Cannell's at Swanley, or growing in the open ground at the Bedfont Seed Grounds, they would be not a little astonished. The truth is, that too much has been done to produce a specimen by means of stopping and pinching, and taking off the first blooms to enable the plant to show its natural character and beauties, and thus the fine qualities seen in the plants as grown for the production of seed in the places above named are not found. Plenty of growth and an abundance of small flowers are found, and there the results end. On the other hand, far too many who grow Balsams for the greenhouse in pots starve them and draw them, and generally show them entirely spoiled. The Balsam is a gross feeder and likes an abundance of moisture. It does best in pots of moderate size, such as those measuring from 7 in. to 8 in. in diameter, if plenty of water be given with a frequent dose of liquid manure; or it thrives as well in the open ground if the soil be not too rich and kept moist during the flowering time. In either case, however, the simpler the treatment the better the plants thrive, and, as a rule, the finer the blooms. At Messrs. Smith's, where several thousand plants are grown, all are placed under glass in broad span frames, and the pots stand on ash bottoms. As the plants are near the glass, and the lights can be drawn off on either side, so that plenty of air is admitted, the plants are dwarf and robust, and it would be easy to select hundreds that would grace any exhibition table in the kingdom. The seed is sown in pans and boxes and raised in a gentle heat in cool houses near the glass; the seedlings are pricked out singly into 3-in. pots, placed in frames, and kept near the glass, and finally shifted into 8½-in. pots, in which they flower; then when in August the plants are about 1½ ft. high, the centre stem covered with the finest blooms imaginable, many 3 in. in diameter and of many diverse hues and markings, and the side shoots are also well covered with flowers, these Balsams are, indeed, a sight to see and to admire, and even to be enthusiastic over. At the Bedfont Seed Grounds the Balsam is chiefly grown in the open ground, and is doubtless in this way productive of much interest to those who love to decorate their gardens with old-fashioned flowers. Some plants of every kind are grown in pots under glass to make sure of the stocks, as such a misfortune has before now happened that no seed has been obtained from the open ground, either because the season has been too wet and cold, or frosts have set in with unusual earliness. As a rule, however, the plants give a good crop of seed-pods, and a loss of crop is the exception. Most people in planting out Balsams in the open ground first get them well established in small pots, and so plant them out. This is a mistake, as it simply results in the production of a perfect bush of growth and leaves and few flowers, these few being obscured by the foliage. At Bedfont all the plants are simply dibbled out in rows, just as Stocks, Asters, &c., are; and although it takes rather longer for the plants to get established, nothing could excel the fine feature presented when in bloom. Soil too rich is avoided, and such as was manured for a previous crop, and has been well pulverised and broken up by forking, suits best, as this produces the finest flowers and a less sappy growth. This is a point which those who may be disposed to try the Balsam as a bedding plant would do well to heed, as many, having regard to the fact that the plants are gross feeders, manure the soil heavily, and thus promote foliage at the expense of flower. The love of gross feeding is rather displayed under pot culture, when, the pots being full of roots, manure water may often be given with advantage. For seed-saving it is found desirable to pinch out the points of the branches when well covered with flowers and thus check their production after a given time; it is well also to pinch off all the small numerous side shoots that form late upon the plants; these would produce flowers profusely up till the frost comes, but for seed production they are rather doing more harm than good, and therefore are best removed. Where the plants are grown to produce flowers only these may remain, but the strong branches should be stopped to keep the plants in proper form. If it were proposed to plant a bed of Balsams in colours, say of half-a-dozen kinds, it is desirable to know what are the habits of the various colours, that the plants may be arranged to the best advantage. Some colours are produced on plants that are taller than others, and the habit is always the same from year to year, so that if the colours be obtained they may be relied upon to produce the required effect if properly planted. Here are six sorts that should be planted thus: Centre of bed, or back row of border, carmine, a glorious kind; white, pure and of great size, a very fine kind; purple, the flowers sometimes spotted with white, even when seed be saved from self flowers, so liable are some colours to sport; pink, a beautiful and chaste kind; scarlet, a deep rich hue, very brilliant and very free flowering; and, last, the dwarfest of these tall kinds, buff-white, a wondrously free-blooming sort, that produces large double flowers. These are but a few of the colours found, as I will presently show, but they are self colours, and would make a charming arrangement if planted as proposed. These are also very pretty for small pots and suitable as window plants—a dwarf or bijou strain, the plants averaging 9 in. in height and of several colours. These, however, are not suitable for exhibition. Colours and markings in any good and valued strain of Balsams include the following, and probably a few others, as some sorts sport continually. These are taken from plants in bloom, and not from any seed list: Pure white, buff-white, rosy-white, lavender-white, pale mauve, peach, pink, carmine, scarlet, cerise, crimson, violet, purple, purple-white blotch, scarlet-white blotch, carmine-white blotch, crimson-white blotch, white-carmine flake, white-purple flake, carmine Bizarre, and crimson Bizarre, all clearly distinct and beautiful. These show that it ought not to be difficult to have a really varied selection of Balsams in any garden. A. D.

THE ALLAMANDA AS IT OUGHT TO BE GROWN.

This has long been recognised as one of our finest stove climbers and it should be grown as such, and not as a pot specimen. When it has room, it grows at a rapid rate, and soon flowers. A specimen here, which two years ago was newly rooted in a 3-in. pot, is now a large plant, covering a large amount of space, but not so much by a long way as it might have done had it had more room. From the 3-in. pot it was transferred at once to a 12-in. pot, started early in a stove, and pushed on in a genial temperature, and it flowered well towards the end of the same season. Last year it produced a great quantity of flowers on till near Christmas, and this season it has not produced less than 600 or 700 flowers, all of large size and good substance, from an area about 20 ft. by 3½ ft. The same flower-spikes continue to flower during the greater part of the season; and I have examined some to-day that have produced no less than forty-five blooms each, in succession of course. There are many flowers on the plant now. The Allamanda exemplifies in a remarkable manner the wisdom of the practice, now finding favour in the culture of both fruits and flowers, of permitting the shoots to extend so as to run them out into flowers, as we have more than once advocated, particularly in the case of the Bougainvillea. If one keeps cutting too much at the Allamanda, we simply encourage growth of more wood, that is less and less inclined to flower. The best way is only to thin the shoots, removing such as are not wanted entirely, and allowing the others to extend. In winter, when the wood is partially ripened, the branches may of course be pruned back, according to circumstances; but once growth begins again it should not be interfered with. This is the treatment our plant receives, with the above results. Probably I have understated the number of flowers, as we have been cutting from the plant every day for months, and I only calculate from the number of spikes left on the plant, and the flowers they have produced. Many of the individual flowers measure 6½ in. across. The plant has been growing in strong loam, chiefly in a pot plunged in the bed. Opposite it, to match, is a plant of Dipladenia Brierleyana, but we do not find it to be such a free flowerer as the Allamanda—nothing like it, in fact, though it has flowered continuously all the summer too, and is flowering still. It also is allowed to climb along the wires. I was told by the nurseryman who sent it that it was not suitable for the situation, as it would not extend above 12 ft. or 15 ft.; but our plant has shoots upon it 30 ft. long, and it looks as if it would grow as far again. It is, however, getting rather bare at the bottom, and we propose taking some of the leaders back next year, to clothe the bare stems. C.

Casuarina sumatrana.—This is a very pretty plant when in a small state for table decoration, or the sprays of it may be used in many floral arrangements, and they are even more delicate in appearance than Fern fronds, and the soft green of its thread-like growth contrasts well with the deeper colour of its stem and older branches. For the adornment of cool conservatories this plant is well adapted, as it excels in appearance many plants grown for the effect their foliage produces, and which require a high temperature for their proper development.—J. Groom, *Linton Park, Maidstone.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Conservatory Climbers at Birmingham.—Visiting recently the Botanic Gardens at Birmingham, I was struck by the effect produced in the conservatory there by the training together at one end of the roof Lapageria rosea, L. alba, and Lasiandra macrantha, all of which were profusely in bloom when I saw them. They were not trained in the orthodox style on wires stretched tight and straight; on the contrary, the branches were suspended in festoons which intermixed in what appeared to me to be studied confusion. The effect was striking and rich in the extreme.—O. Thomas, *Drayton Manor.*

Chlora perfoliata grandiflora.—This large-flowered form is much handsomer than the type, and is, moreover, a very useful plant for cutting, as its fine yellow blossoms are borne on slender stalks, and last a long time in good condition. It delights in stiff and rich soil with plenty of moisture and partial shade; under such treatment it yields a fine crop of flowers; and, though of biennial duration, it should be in every collection; it grows freely from seeds.—A.

Ornamenting Plant-house Walls.—The walls of stoves and greenhouses, which are too often left bare and unsightly, might, with a little trouble, be rendered the most effective parts of the houses. As an illustration of this we lately saw in Mr. Bull's nursery, Chelsea, some walls covered with plants, which had a charming appearance. Square pieces of peat soil, stacked edgeways one above the other, and firmly secured to the wall by means of wire, is the best material in which to grow the plants, and, if preferred, this could be covered with Virgin Cork. Amongst subjects used on the walls alluded to were noticeable fine, healthy plants of Anthurium crystallinum, Curculigo recurvata variegata, Alocasia Lowi, Selaginella cœsia arborea and other Club Mosses, Maranta Lindeni, Adiantum ciliatum (Edgworthi), Fittonias, Maiden-hair Ferns, Monstera deliciosa, Phyllanthus rosea, Philodendrons, Syngoniums, Paullinia thalictrifolia, Stag's-horn Ferns, &c. Such plants as these love a moist temperature, and grow vigorously if kept well syringed overhead, an operation which keeps the soil and wall moist, a condition which renders the plants proof against insect pests; and if they be arranged artistically, as is the case with those alluded to, a really charming and picturesque effect can be produced with little trouble, and without taking up scarcely any room.—C. S.

A Fine Stephanotis.—When allowed plenty of room and properly treated, it is astonishing to what dimensions the Stephanotis will attain, and what a quantity of blossom it will yield. One of the largest plants with which I am acquainted is growing in Mr. Wills' nursery, Anerley. It is trained lengthwise on wires, under the roof of a lean-to house 70 ft. in length. There are about thirty-five wires about 9 in. apart, giving altogether 2450 ft. or nearly half a mile of wires, to each of which are tied quite bundles of shoots. This plant, which yearly furnishes thousands of flowers, receives but little pruning, neither are the shoots ever disturbed in any way, excepting when they get very thick indeed. In February and March the old wood pushes out abundance of bloom from the axils of the leaves, and when this crop of flowers is gathered, some of the rougher or worthless wood is cut out; young growths are made freely, and in June the plant is again a sheet of blossom. If the plant gets attacked by insects, the garden engine and clear water are brought to bear upon it with such force, that the insects are dislodged. This operation is repeated at frequent intervals during the time in which the plant is out of blossom, and it is considered a much more satisfactory method than that usually adopted, viz., that of unfastening the shoots from the wires, pruning them back, and sponging them, an operation which disturbs the buds and destroys a large quantity of blossom. Where trimness and order are required, the cutting back and thinning system is doubtless the best; but where the largest quantity of blossom that can be produced is aimed at, the plant must be disturbed as little as possible.—S.

Bouquets in Covent Garden.—I recently noticed when passing through Covent Garden that the bouquets in the florists' shops presented a great improvement on those I had seen there in former years, the colours being not so much mixed, but more decided in design; as, for instance, where only one spray of flower of any kind was originally employed there are now several used in bunches of two or three together, and they consist only of a few bright, distinct colours with a liberal admixture of foliage, which produces an excellent effect.—J. Groom, *Linton.*

THE KITCHEN GARDEN.

IMPROVING LIGHT VEGETABLE SOILS.

One way of dealing with light soils in dry seasons is to mulch them with such material as can be purchased at an inexpensive rate, and laid up for the purpose during the winter and early spring months. Light stable litter—which is cheap enough even if it has to be purchased, but which is common enough about most gardens—will answer the purpose well if it be turned over a few times during the winter and mixed with other manurial refuse, such as spent hotbeds and similar material, which, having lost the greater part of its nutritious elements, is of little use, except for surface dressing. All such spare refuse being collected together and incorporated well with each other will make capital material for encouraging surface roots and protecting them from the unhealthy action of parching weather, as well as retaining the natural moisture of the soil. It is a fact but too well known that light, porous soils—although their condition is improved by mulching—require considerably more labour than that of mere surface dressing to make them productive and capable of sustaining good crops in dry seasons. Having succeeded in improving a portion of the kitchen garden here, which is naturally of a poor, sandy character, the plan which we adopted may be of benefit to others. I may state that during the alterations here we came across several veins or beds of yellow clay, which was in due course removed to an out-of-the-way corner near the portions of the garden where it was required to be used. As the crops were gathered the clay was wheeled on to the surface of the ground and spread regularly over it to a depth of 6 in. It was thus exposed to what frost we get in winter and the action of the weather generally till spring, when the ground was dug over in the following way: An opening was taken out at one side of the plot, and a thick layer of cow manure, the best that could be procured, was put in the bottom of the trench; on this the layer of clay was laid, and the natural soil was dug to one spade's depth and laid over it; this was repeated till the work was completed. Before cropping commenced in the spring the ground was deeply forked over, the object being to work the clay and the ordinary soil as much together as possible. That year such crops as Peas, Broad Beans, Cauliflowers, and Brussels Sprouts were greatly improved, but of course the experiment was as yet only half tried. During the following autumn we kept burning clay and every other rubbish that was within easy reach, such as Pea straw, old Pea rods, thinnings of plantations, and stumps of trees—anything and everything, in fact, that could be converted into wood ashes. The clay fires were kept going for months together till the winterly rains drowned them out, the wood ashes and burnt clay being spread over the surface as the unburnt clay was the year previous. In addition to this all the decomposed vegetable matter that could be collected together, as well as the surfacings of fruit borders that were being renewed, and worn-out potting soils, were all utilised to swell the heap of ingredients, which in process of time accumulate to no inconsiderable bulk. These soils were likewise spread over the same plot of ground, which was ridged up last winter without the addition of manure. In the spring the ground was again forked over thoroughly, and this time the operation of mixing the soils was accomplished more satisfactorily than before, from the fact of there being no manure worked in that would impede the process of incorporation. When the land was in the best of order a dressing of short manure was given, and the surface made fine before the seeds were sown. The ground was chiefly cropped with Peas, Broad Beans, and other vegetables intended for exhibition, and the results, especially as regards Peas, were such as to inspire one with confidence as to what can be done in the matter of improving light soils. We have never had such crops of Peas before, the quality being in all respects excellent and the yield something extraordinary, the pods being of a fine size; but perhaps the most remarkable feature of the whole was the beautiful green colour of the pods and the dense bloom, a result which I attribute solely to the application of burnt clay and wood ashes. I have used both these substances for fruit-growing purposes largely with the best results, and the elements contained in them seem eminently adapted to vegetable culture as well. In preparing land for future crops, I would recommend that each plot be set apart for its own particular pupose, and prepared accordingly. It is also necessary that prepared soils, composed of several parts of clay, should be turned up to the influence of the weather early in the season; for instance, land that will be required for summer crops of Peas, Beans, and Cauliflowers will be improved by being dug over and manured as the crops are cleared away. In digging the ground it is advisable that all added or rich matter be kept near the surface, and that no bad subsoil be disturbed, except to remedy defective drainage. When the opening is taken out, a shallow trench, 1 ft. or so in width, will be sufficient. The layer of manure is laid on the bottom and covered over with 3 in. or 4 in. of the surface soil turned bottom side upwards; then the soil is turned over to one graft in depth and laid angle-ways roughly across the trench. This plan I consider an improvement on the old ridging system, as every spadeful of soil is fully exposed to the weather during winter, causing it to become thoroughly pulverised before sowing or planting takes place in the spring.

Otterspool. W. Hinds.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Canadian Wonder Bean for Forcing.—I observed in the kitchen garden diary that this Bean was mentioned as suitable for present sowing. If it will answer well as a forcing Bean for mid-winter, it will be very valuable. Hitherto I have obtained the best results from the dwarf varieties, such as Osborn's Prolific. I have had splendid crops of Canadian Wonder out-of-doors in the hottest months, but for late crops it was not so prolific as dwarf varieties. Its size and other good qualities render it an acquisition at any season, and any remarks as to obtaining it in quantity during the winter months would be acceptable.—J. G.

Vick's Criterion Tomato.—I have given this Tomato a fair trial this season by growing it alternately with the old common red kind, which is still the best, generally speaking; but Vick's Criterion is, to say the least, equal to it, if it does not surpass it as a grower and bearer late in the season. In other respects it does not surpass the old variety. Its fruit, too, is smaller; but it produces a greater number of clusters. The fruit is also smoother and rounder, if that be any advantage, which I do not suppose it is. Our cook uses the one as readily as the other. Of the other varieties of Tomatoes sent out of late years, I have found none to equal the old red for general excellence, and we have always grown it; and we grow a large quantity of Tomatoes, as I find we can dispose of the spare fruit readily and at a good price, in exchange for Jersey Pears and dessert Apples, which we have to buy. I see the French growers still continue to grow the old red exclusively—at least, when in the Halles Centrales lately I saw immense heaps of it and no other.—S. W.

Smooth *v.* Wrinkled Tomatoes.—I agree with Mr. Hobday (p. 386) that smooth Tomatoes are best, and in this respect I find none to beat Vick's Criterion. Of the Orangefield I have grown a large quantity of late by keeping the old plants growing. I placed them on the back flue of a Vinery, and trained them up the wall. They had the depth of a brick on edge of ashes under them, and they soon got full of roots. The plants were in 6-in. pots; the Vinery is 72 ft. long. The flue has been a double one, as the house was formerly used for Pines and Vines; sometimes now it is heated, but, as a rule, it is very little used. I stimulate the roots amongst the ashes at times, for there is a great advantage in keeping the old plants growing. When that is so, one seems never to be without fruit, and the growth is not over luxuriant; on the contrary, we get short-flowering shoots that produce an abundance of fruit from, I may truly say, March to December. I have this year uprooted all but one plant of the Orangefield to give place to Vick's and a plant or two of a very large variety given me by Mr. Wallis, of Keele Hall. These I have got in much larger pots, and even now there is a good crop on Vick's and a few fine fruit of Mr. Wallis's variety.—Geo. Bolas, *Hopton.*

Telegraph Cucumber.—This when true to name still occupies a prominent position both for market and for private gardens, and in my opinion, taking it all round, it is the best Cucumber grown.—D. S. Gillett, *The Heath, Weybridge.*

PLATE CLII.

THE AURICULA.

(WITH COLOURED FIGURES OF SOME OF THE BEST VARIETIES.)

Amongst what are termed florist flowers the Auricula is the first to gladden our eyes in spring with its rich and varied blossoms, and so popular has it become within these last few years, that the choicest and scarcest varieties are wholly unobtainable. The section of the genus which is most esteemed is that which was brought to a high state of perfection nearly a hundred years ago. Let me, therefore, briefly describe the points of excellence to which attention has so long been directed. The first class comprises green-edged flowers, and includes all that have the outer margin of the flower quite green, or very sparingly dotted with white points of meal, so that the edge at first sight still appears green. Inside this edge is the body colour; black is most esteemed, but it is also of different shades of maroon, violet, and plum colours; the body colour flashes into the edge, and is never found in a compact ring, as one often sees it in the "model" Auricula represented in drawings. If the body colour, as it often does, strikes through the outer edge it is a serious defect, and the beauty of the best flowers is marred thereby. Next is the paste, which should be circular, dense, and pure white. The beauty of many otherwise fine flowers is marred by the angularity of the paste. Booth's Freedom and Campbell's Admiral Napier have this defect. The tube should be bright orange, as a pale tube quite as seriously mars the beauty of the flower as the body colour striking through to the outer edge. Beeston's Apollo is an example of a flower with a beautiful green edge, and the body colour and paste are also right, but its pale tube is a demerit, a fault even more strikingly exemplified in Trail's Prince of Greens. The beautiful emerald green edge of the latter incloses a perfect black body colour, and solid pure white paste, but its watery tube ruins all. Auriculas, indeed, are still far from perfection as regards green edges, although many are very beautiful.

The next class is the grey edges, and in this are to be found the most perfect flowers yet raised. The points in this, as in the next class, are the same as those indicated above. The best flowers in this section have not the same defects as the best flowers in the green-edged class. Headley's George Lightbody, for instance, is an example of the very best Auricula in existence; its parts are evenly balanced, and the paste is circular. Lancashire Hero (Lancashire) is also a noble grey-edged flower, and one which is not always second to Mr. Headley's Masterpiece itself, though not quite such a decided grey as that flower; the meal, too, is so thinly laid on the edge that it is sometimes classed with the green-edged sorts. A defect not yet mentioned, but one which cannot be overlooked, is a scollopy paste. An example of this is to be found in a fine flower of my own raising named Silvia; the tube, body, colour, and edge are all that can be desired; the edge has that silvery-frosted appearance, which is most esteemed in the grey section, and it received a first-class certificate at the Crystal Palace National Auricula Show. Still, it has that defect, and, as the raiser of it, I would like to point it out.

The white-edged flowers are distinguished from the grey by the greater density of meal on the edge. In some cases this is laid on so heavily that the edge is almost as white as the paste. This may be observed in Walker's John Simonite, a very fine new flower, and perhaps the best white-edged flower yet raised. Yet another defect, and one most frequent in the white-edged kinds, is the body colour being dusted with the meal intended for the edge. Summerscale's Catherina, a small, neat flower, has this peculiarity; indeed, some varieties, such as Lightbody's Fair Maid, has this fault to such an extent that they cannot be tolerated in a select collection.

Selfs are flowers that have all the margin outside the paste, one decided colour without shading, and they are necessary, having brilliant colours to form an effective contrast to the three other classes. Their edges are variously coloured, yellow, slate, bluish-violet, violet-purple, maroon, black, and crimson.

The Alpines must constitute a section by themselves. Those who are not intimately acquainted with them may ask what is an Alpine? Are Auriculas not all Alpines? They are; and I can only surmise that the section in question, being distinct as a class, were thus named provisionally to distinguish them from the "florist" varieties. In Alpines the tube is yellow or pale as in the other class, but the part surrounding the tube is yellow or cream-coloured, and has no paste. This is surrounded by an edge of one colour which should be darkest near the centre, shading off to a paler colour at the edge. The finest Alpines are those with bright yellow centres and maroon or crimson-shaded edges. Flowers with cream-coloured centres have usually mauve or light purple edges shaded in the same way. There are Alpines with very richly-coloured edges or, as some term them, self edges, but they have a dull, heavy appearance in comparison with the shaded flowers.

Auricula trusses should be well formed of five, seven, nine, and eleven flowerets or pips; even numbers do not fill in quite so well as odd ones. The truss should be supported by a stout elastic stem, long enough to carry the head of bloom bravely above the foliage. The diversity amongst the latter is very striking, and is at all times a source of enjoyment to Auricula growers. Some have the foliage quite as thickly dusted with meal as the flowers. Green-edged flowers, as a rule, have foliage destitute of meal. Many of the grey-edged sorts have mealed foliage, and some have it dusted with a very fine powder, and edged with a silver thread, as in Douglas's Silvia and Lightbody's Richard Headley.

Propagation is effected by means of offsets, or by dividing the plants, and by seeds, from which alone new varieties can be obtained. Seeds should be saved only from flowers that have been artificially fertilised, and it may be worthy of remark that the pollen parent exercises the greatest influence on the progeny. Seeds may be sown as soon as they are ripe, or they may be kept until February, and be sown in a gentle hotbed. If they be sown in July, when they ripen, the largest proportion of them will not vegetate until the spring. Some varieties increase much more rapidly than others, and many fine sorts remain scarce from the difficulty that exists as regards getting offsets. With the view of increasing scarce varieties, I have sometimes boldly cut their heads off near the surface of the ground. The top will make a strong cutting, and will soon form roots under a bell-glass, and the old stump will also soon throw out growths. I have obtained six or more in this way from one stump. Some varieties will not produce offsets so freely as others, even in this way. Lee's Col. Taylor is very shy, but Taylor's Glory is quite the reverse; Cunningham's John Waterston is also a good breeder.

Auriculas are plants well adapted for owners of small gardens, inasmuch as they take up but little room and are easily managed. No plant, indeed, is easier to cultivate, but they require considerable attention, and that, too, at the right time. Though natives of high-lying regions, where the air is clear and untainted by smoke, they will, nevertheless, thrive where less beautiful plants would pine and die. In Mr. Benjamin Simonite's garden, in the midst of the sulphureous atmosphere of Sheffield, where the sun at noonday reminds one of Coleridge's lines in the "Ancient Mariner":—

> The blood-red sun at noon
> Right up above the mast did stand
> No bigger than the moon.

In such a place the Auricula grows and flowers almost as well as it does in the vicarage garden at Kirkby Malzeard, where the air is pure and bracing as in an Alpine valley. Careful potting is a prime element as regards insuring success; the drainage must be free, as stagnant water will cause the stems to rot. Cleanliness, too, must not be neglected. Green fly, a troublesome pest, can be most readily destroyed by fumigating with Tobacco. It is best to do this during the winter; at other times the fly may be kept in check by brushing it off with a camel's-hair pencil. Decaying leaves sometimes induce the stems to decay if not promptly removed. During winter water must be applied with caution. I never water a plant until it is quite dry at the roots.

The centre flower in the annexed plate is a green-edged seedling of my own, and, like all the violet flowers, has a pale tube which does not stand. The green-edged yellow is a seedling raised by the Rev. F. D. Horner; it is one which he would not tolerate in his own collection, and yet Mr. Harrison Weir, looking at it from an artist's point of view, is charmed with it.

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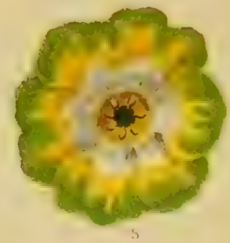
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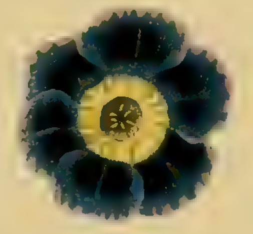
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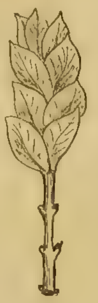
A.

The flower on the left of the centre bloom has an inky tube; it is a grave fault when a flower has a tube that dies off in that way. If that inky tube were bright yellow what an improvement it would be! The artist found a discoloured tube and painted it so, and we owe him our thanks for the fidelity with which he has brought out the faults as well as the beauties of our favourites. The names of the flowers in the plate are as follows, viz., 1, Catherine; 2, George Lightbody; 3, Robert Trail; 4, Mercury; 5, Seedling; 6, Ne Plus Ultra (Fletcher); 7, Seedling (Douglas); 8, Seedling (Horner); 9, Queen Victoria; 10, Formosa; 11, True Briton; 12, Lord Palmerston; 13, Ne Plus Ultra (at its best). J. Douglas.

PROPAGATING.

Boronia serrulata.—This is one of the most difficult of this genus of plants to propagate. The cutting pots should be new or washed very clean, well-drained with small crocks, and have a 2½-in. pot inverted over the hole at the bottom. The soil must be finely-sifted peat, mixed with one-fourth of silver sand. Put a layer of the rougher siftings over the crocks, and then fill up firmly with fine soil, putting ¼ in. of clean-washed silver sand on the top; press all down level, water, and place the bell-glass in position, marking where the cuttings are to go. The latter should be made in the way represented by the annexed illustration. Then make a hole with a small dibber, and fasten them in in the usual manner; the holes should be filled up with dry sand. Then sprinkle with water, and place the bell-glass over them. Set the pots on a gentle bottom-heat, and wipe the glasses dry every morning. Under the best circumstances it generally takes nearly three months before roots make their appearance, but after that occurs they begin to show signs of growing; then the glasses may be tilted a little with a small piece of wood or crock, afterwards increasing the amount of air given by degrees. They should then be gradually hardened off by placing them on a cool bottom in another part of the house. They will be ready for potting off in July. H. H.



Cutting of Boronia serrulata.

Cineraria maritima from Seed.—Mr. Fish (p. 330) asks for my opinion as to the reason of the leaves of seedling plants of this Cineraria having a greenish tint the first year, and therefore being inferior in appearance to those raised from cuttings. My own impression is that the luxuriant growth of seedlings causes the same effect as that produced on variegated Ivies and similar plants by supplying them with an unlimited quantity of rich soil, viz., that of causing them to revert to the original type or green-leaved form. Some plants of a variegated-leaved character appear to be of a much more fixed or permanent character than others, and less susceptible to the influence of soil or climate. Doubtless Mr. Fish has remarked a similar disposition in the common Pyrethrum Golden Feather, and knows that seedlings of it are superior to plants raised from cuttings.—J. Groom.

Ornamental Solanum Blighted in a Night.—I had a bed of a strong-growing succulent Solanum (I do not know its name), the seed of which I brought with me from a garden in The Riviera, which was blighted and blackened in a single night early in the month of September. Not one escaped of a large bed that promised to be so beautiful when in flower. About the very same time, I believe, our field Potatoes were more or less affected with disease. Is it possible that the same agent—atmospheric or fungoid—brought about the same results? I draw attention to the circumstance to ascertain, if possible, how far the experience of others agrees with my own observations. Has the Potato blight been known to affect other Solanums beside Solanum tuberosum, our well-known esculent? I should really be glad of any definite information on the subject from eye-witnesses. Can there be anything in the sap of the Solanums that would attract and foster the disease? It may be well to mention that other Solanaceous vegetation was growing in close proximity to the affected flower-bed. Cestrum, Iochroma, Brugmansia, Habrothamnus, and Petunia were all in the open borders, as was also Solanum pseudo-capsicum; but all escaped the blight.—Peter Inchbald, *Hovingham Lodge, York.*

GARDENING FOR THE WEEK.

Roses.

Pot Roses.—The production of Rose blooms weekly throughout the year would at one time have been considered impossible, and no doubt it was the market growers, prompted by the high prices which their beautiful half-expanded buds realised, especially during February, March, April, and May, that first gave evidence that Roses could thus be had. In many private gardens winter Roses are now produced equally good, and there are numbers who would, if they felt there was a likelihood of success, make similar attempts. In order to be successful a house must be devoted wholly to them, for there are no plants that require exactly the same kind of treatment. Such a house must in size be in accordance with the quantity wanted. Indoor-grown Roses, although they do not expand so quickly as in the open air during summer, or fall quite so soon when open, are, nevertheless, flowers that do not last long; consequently, where even a small handful or less of buds is required every day, it will be necessary to accommodate as many plants as will frequently furnish more than are wanted, even with the best judgment as regards regulating the supply. Acting upon this, it is well not to have the house too small. Another and most important consideration is to have it so constructed as to admit every ray of light possible. A span-roofed house with both ends and sides glass, and with no more timber in it than is necessary to give sufficient strength, is the only suitable one for Roses. It should be placed away from walls, trees, or any other darkening influence, and there should be a sufficiency of hot-water pipes to command at all times an intermediate temperature, particularly in the depth of winter. One of the greatest sources of failure with those who have attempted winter Rose growing, is their treating them more or less in accordance with some of the principal conditions under which they exist out-of-doors, particularly in the matter of air. Contrary to what might naturally be supposed, Roses grown under glass with more or less heat require, and will bear, comparatively but a small amount of air. Some of the most successful growers for the London market scarcely ever give any air to their Roses, except through a moderate opening of the roof-lights, none being given at the side-lights or ventilators at all; its admission in that way would be certain to be followed by an attack of mildew, the greatest enemy with which the forced Rose grower has to contend. Only a short rest is given after the production of a spring crop of flowers, sometimes by turning the plants out-of-doors for a few weeks, but as frequently by keeping them under glass altogether and discouraging growth for a time. I am now speaking of Tea Roses, on which the grower of winter flowers must almost wholly depend. In fact, to manage these Roses successfully under glass, it becomes necessary to some extent to completely shut our eyes, or forget the conditions under which they exist outside. A great advantage in growing Roses under glass is, that, through the fact of the soil used in potting having to be selected and prepared in the way usual for pot-grown plants, the limited quantity required permits of that being procured which is best suited to the growth of the plants in situations where the natural soil is such that Roses do not do well out-of-doors; and it is on pot plants in a great measure that reliance must be placed for the continuous supply that I am now speaking of, for although Roses when planted out in a well-prepared border soon grow to a very large size, and produce periodically quantities of flowers, yet the fact of their attaining these dimensions at once prevents the possibility, without several houses being devoted to their cultivation, of having that continuous succession obtainable from the very much larger number of pot-grown plants that can be accommodated in a limited space, and amongst which some or other, when fairly managed, are never out of flower, as the Tea varieties, when kept all or through a great portion of the year under glass, keep on continually making more or less growth, and with this flowers; for it appears that when so treated they are never totally at rest nor seem to require it, the difference in this respect simply being that more growth is made during the summer than in the autumn and winter, even under the application of fire-heat.

Heat Required by Roses.—In a thoroughly light house, similar to that just described, with the plants well up to the glass, these Tea varieties will bear more artificial heat than those not actually conversant with this method of cultivating them would suppose; 48° or 50° at night at the present time will answer for them, with 6° or 8° above this in the daytime, and even a few additional degrees when it is sunny, giving, as before indicated, during the day air at the roof lights according to the state of the weather, but scrupulously avoiding any draughts by its admission at the sides of the house, for now that the external temperature is considerably cooler than the mean of that in which the plants are grown, it would create mildew. For the same reason it is essential not to let the temperature fall much lower than that which I have stated; and even with these precautions, mildew will from time to time make its appearance. In order to counteract its spreading, it must be diligently sought for; its presence will be made known by a curl and discolouring of the leaf, when not a day should be lost in dusting flowers of sulphur on the affected plant or plants, for if left only a very short time the fungus will spread over almost all the occupants of the house, and even if afterwards destroyed, its injurious effects will be unmistakeable by quantities of the leaves falling off, which is fatal to the growth necessary for the production of bloom.

Watering and Potting Roses.—The plants at this season must be carefully watered, never letting them get too dry, as the roots under this system of culture are continually at work, but still so much must not be given as will produce anything like a saturated condition of the soil, a result which will follow if water be applied in nearly the quantity necessary in summer, when, independent of what the plants absorb, the drying powers of the sun and air are so much greater. Under this method of Rose growing, with a number of plants, many that make more vigorous progress than the others will require potting at times apart from those at which the general collection are thus attended to, and at whatever time in the year a plant gives evidence of needing more root-room, I should recommend a shift being given. It will usually be found that those specimens that are thus treated apart from the rest are the ones that do the most to keep up a succession of flowers. Roses that are kept on growing in this way for a considerable portion of the year will from time to time, as they gain strength, throw up stout sucker-shoots from the bottom. It is from these that the largest number and finest flowers are produced, and to make room for them the weak, small shoots that do not appear inclined for further development should by degrees be cut away, not going through the whole collection at once, but a few at a time. This treatment will be found to favour the having always some in flower better than subjecting all the occupants in the house to similar treatment at stated intervals. Again, where flowers are thus continuously wanted from a somewhat limited space, the plants must not be allowed to get too large, for though such will afford an abundance for a time, like the planted-out specimens, still they will not keep on like a larger number of smaller plants. When they get large enough to occupy 12-in. pots the knife may with advantage be used so as to keep them within the limits afforded to the roots by pots of this size, not by actual heading down at any one time, but by progressive reduction of the weakest shoots, for, as will easily be understood, the result required under this system of cultivation are of a continuous character, and quite different from that which aims at a blaze of bloom during any given time.

Soil.—It is well to remind beginners in this most desirable method of Rose growing that besides the all essential description of house in which to grow them, to which I have alluded, they require a suitable soil, which should be of a strong, unctious, adhesive nature, for though the Tea varieties succeed out-of-doors in a lighter description of soil than the other kinds, still under pot culture it can hardly be too strong or close, provided it be not impervious to water. Where strong, heavy soil is not available, if good yellow clay be taken and thoroughly dried by exposure to the atmosphere, or placing it on the top of the hot-water pipes, on the brickwork which encloses a boiler at work, a flue leading therefrom, or any position which will effect the same purpose, that is to dry the clay so thoroughly that on being moistened it will crumble down into small particles almost like lime, mixing it one-half with lighter sandy loam and some good rotten manure, and in the operation of potting ramming it into the pots as solid as it can be got, this will grow even the most delicate Tea Roses in perfection. I have been induced to enter somewhat into detail on this most desirable way of Rose growing to produce flowers all the year round for the reason that the present is not a bad time to commence, as the plants to begin with can now be bought in and conveyed without the check and injury that even pot-grown plants receive through package and transit at a time when the opposite conditions of the most active growth or severe frost are certain to some extent to interfere with them. Where only one house of rather limited extent is devoted to their growth, it is well to have considerably more plants than it will accommodate, keeping some during the summer and autumn plunged out-of-doors in coal ashes, from whence during the winter and after the present time they can be transferred to a light pit or roomy frame which will give an opportunity of introducing some of them to the growing house to replace any that may be making little progress and require a rest, which transfer should take place during the spring or summer, but not now or through the winter, when to remove plants that had been in warmth and with more or less tender growth upon them into cool quarters would be courting death or serious injury. That, at least, is my experience in the matter.—T. BAINES.

Indoor Plant Department.

Watering.—By those who have only an imperfect knowledge of the cultivation of plants it is often supposed that any one is capable of giving them water, or, in other words, of knowing when they require it, the too general impression with the uninitiated being that if a sufficient supply be given all must be right, and that the plants will go on and flourish. Yet it is a question if many, in their first attempts at plant-growing, do not kill greater numbers by the too free use of the watering-pot than those who are neglectful on that point, more especially at this season of the year, when plants of all descriptions are not in an active condition. When a plant is placed with its roots in the open soil, or even when it is similarly situated in the bed of a conservatory, it is much less likely to suffer from either extreme of too much or too little water than when confined in a pot, for if the soil at any time have too much water applied it will more quickly drain off than it will from a pot, and the roots naturally keep more to the surface when they have room to spread out in a horizontal position, which renders them less likely to suffer if the soil happen to get too wet; on the other hand, if the soil become too dry, the roots, from the increased space allotted to them, have a better chance of extracting the moisture they require from the greater body of earth available, and, lastly, the roots and the whole plant collectively are usually in a more robust, vigorous condition, and less likely to succumb from any extreme of treatment to which they may be subjected; hence, the necessity of a closer attention to the watering of plants grown in pots. During spring and summer, when growth is in active progress, if the water supply be short, most plants will exhibit their want of moisture by the flagging of the leaves and young shoots, and from which injury is not nearly so likely to result in the case of free-growing subjects as by any excess at this time of the year, particularly with those that make slow growth, and that have fine roots. For the inexperienced the two latter characteristics, which generally accompany each other, will be one of the safest guides as to the quantity of water a plant requires to keep it in a healthy state. Heaths and slow-growing, hard-wooded plants may be taken as examples of the greatest impatience of success, and the least requirement of water at any time of the year. Beginners are frequently tempted to purchase these, yet it would be much more advisable for them to confine their practice for a time to quick, free-growing plants until they have acquired the knowledge requisite to enable them to manage these before they undertake the more difficult subjects. Written or verbal instructions cannot do more than point to general practice in this most important operation, as not only will the quantity of water required by any particular species or variety of plant be in a great measure regulated by its more or less vigorous condition, but also the point of dryness which the soil should be allowed to attain before water is given, should be determined by the same conditions of growth in the plant. Yet, still some hints may be given that will enable the inexperienced to acquire the necessary knowledge in this matter by pointing out the greater or less requirements of water by plants during the autumn and winter.

Soft-wooded Plants.—Amongst those that need the soil moist at all times, even in winter, are Cinerarias; these, when well treated, make considerable growth at all seasons, and cannot bear to be dry for even a short period, it being a sure sign when the leaves flag that the plants have received injury. Calceolarias both shrubby and herbaceous come next in their requirements of water, especially the herbaceous kinds. Calceolarias and Cinerarias, in addition to a moist condition of the roots, revel in a humid atmosphere, and should never be placed on a dry surface, such as the front shelf of an ordinary greenhouse. Through the winter the best position for them is on a bed of ashes in a shallow pit, a slight distance below the aperture for the admission of air, so that it will in a measure pass over rather than come in direct contact with them. Where there is no alternative but to put them on shelves, it is well to have 1 in. of Moss spread on the shelves, which, if kept moist, will counteract the drying effects of the situation. The beautiful old Calla (Richardia) æthiopica needs to have the soil moist; although it is almost an aquatic, it is of such a hardy nature that it will bear to be completely dried up without fatal results, though, of course, it feels the effects of such treatment. Heliotropes, Petunias, Lobelias, Carnations, Salvias, Lachenalias, Vallotas, and Cyclamens do not require to have the soil kept quite so moist as the first-named plants, yet they should always receive water before being allowed to get quite dry. Lilies do not need much water in the winter, but though not making much progress in their tops at this season, the roots are actively at work, consequently the soil must never be without moisture, or they will receive a check that will seriously affect their flowering the ensuing year. The different sections of Pelargoniums vary considerably in their demand for water; the zonals of all colours and the bronze and white variegated-leaved kinds being mostly freer growers than the large-flowered sorts, the fancies, and the tricolors, must have the soil kept somewhat more moist, but those who have not yet acquired the knowledge of the exact condition of moisture these plants like had much better err by keeping them too dry than too wet, as the latter state will cause destruction of the roots, resulting in disease from which they will be slow to recover, whilst a moderate degree of dryness will not affect them to a greater extent than slightly stopping their growth. The above-mentioned more tender-rooted, slower-growing sections, particularly the fancies and the weakest-growing varieties of the tricolors, should never be watered during the winter, until the soil has got so dry that little moisture can be detected in it by pressing the fingers on the surface. There is a considerable difference in the strength of growth of the yellow-leaved varieties of Pelargoniums; the old Cloth of Gold, still retained by many, cannot do with much moisture in the soil through the winter; the freer growers will bear somewhat more. All the varieties of Kalosanthes must be watered with caution until they begin to move freely in spring, when they will need more; during the autumn and winter do not apply any until the soil has got almost dry, yet water must not be withheld too long or the under leaves will shrivel up and die, which detracts much from the appearance of the plants, yet does not usually interfere with their flowering.

Hard-wooded Plants.—Amongst these Camellias require more water at all seasons than the generality usually grown. If ever the soil be allowed to get dry from the time the buds have attained a considerable size until they expand, it results in their falling off. Those who have not had experience in the cultivation of Camellias frequently do not attribute the buds thus dropping to the true cause, as it often happens that they do not begin to come off for one or even two months after the injury has been inflicted. The same result will follow if the atmosphere be too dry, but injury from this cause mostly shows itself much sooner in the case of plants having been dry at the roots. This disaster is most commonly brought about by too much fire-heat, and by neglecting to provide means for supplying the atmosphere with the requisite moisture. The useful autumn-flowering Veronicas require the soil always kept moderately moist, especially while they are blooming, or the flowers will be liable to drop. Cytisus racemosus, Acacias, Neriums, Myrtles, Statices, greenhouse Rhododendrons, Lapagerias, Lasiandras, Monochætums, Croweas, Clianthus puniceus, Cassia corymbosa, and Abutilons are plants that should never be allowed to get so dry as the more tender kinds; they are free growers and equally free in producing flowers, afford great variety, and are altogether much more suitable for those to grow whose experience is limited than plants that are of more difficult management. Azaleas, although fine-rooted subjects, should never be permitted to become so dry as with some cultivators. The plants whence the present race of hybrids now in general cultivation have sprung grow principally in the humid hill regions of India, and, although much more tenacious of life than the majority of hard-wooded subjects, they are seriously injured if kept too dry at the roots. The exquisitely-scented Daphne indica, held in universal estimation for its perfume, is often killed by over-watering; except during the season when it is making growth, it should never be watered until the soil has got almost dry. Oranges, especially the small-growing Otaheite variety, need careful watering in the winter, when its roots are at rest. Fuchsias are often completely dried off during the winter, but in the case of old plants that are cut back in the autumn after flowering, they are much better if the soil be kept very nearly dry. In all cases, except with subjects the tops of which die completely down, or nearly so, when water is applied, no more should be given than will moisten the whole moderately in the winter season; to pour water to a plant until the soil is saturated during the winter, when at rest more or less, is as bad a treatment as can possibly be followed, especially if light potting (the bane of plant culture) have been adopted, as in this case the soil will obviously hold water like a sponge. When a plant of any description is growing in a pot comparatively small, it should never be so dry before water is given as if it had a larger body of soil surrounding its roots.

Flower Garden.

In favoured localities the beautiful Chamærops Fortunei, Dracæna indivisa, Phormium tenax, Aralia papyrifera, and many others of a similar character may be trusted out if they be provided with a good coat of dry leaves or Fern made secure around the stem and collar of the plants so as to preserve the most vital part from frost. Sheltered in this way it is surprising what an amount of cold many plants will endure if the soil in which they are growing be not of a wet, retentive nature. Where any doubt exists as to the safety of any choice specimens of the above, they should be lifted at once with as large a ball of earth attached as convenient, and placed in any spare cool house, or light, dry shed, from which light is excluded. Aralia papyrifera may be wintered in almost any out-of-the-way place, as it matters little about the loss of its leaves so long as the stems are preserved, the crowns of which start again in the spring and appear all the more vigorous for the rest they have received. Aralia Sieboldi is perfectly hardy, and one of the most strikingly ornamental plants for the centres of beds, the backs of shrubby borders, or for grouping amongst others in the sub-tropical garden. Now that this kind of embellishment is so much in vogue it is very desirable to introduce as many hardy plants as possible, so as to lessen the labour and expense attendant on raising a fresh supply each year, or the inconvenience of having to take up valuable house room to winter them. Cannas are still looking as well as at any time during the year as far as their foliage is concerned, and may be left to display their beauty till cut down by the frost, when they can be lifted and stored in any dry shed, or left in the ground if covered with half-rotten leaves, or any other safe non-conducting material that will preserve them from frost. In well-drained beds, treated in this way, they become much stronger than they do if dug up now and replanted in the spring, as they lose many of their large, fleshy roots in the drying they undergo when stored in the winter. Echeveria secunda glauca, now so much used for bedding purposes, should be laid in thickly on steep, sloping banks, under south walls or other sheltered positions, where, with a mat thrown over them during severe frosty weather, they will be found to winter safely; or they may be laid in under any old spare light just to keep the crowns dry, in which state they will remain quite hardy. Gladioli now ripe should be lifted and laid on the floor of a damp shed or cellar, or some other position where the corms are not likely to become sufficiently dry as to cause them to shrivel, for when that takes place, they lose much of their strength and vigour, and not unfrequently die altogether. If the tops are still green, they should be allowed to remain till they fall off naturally, and not be cut away, as is sometimes done when the bulbs are dug up.

Indoor Fruit Department.

Vines.—Prune all Vines from which the leaves have fallen; remove all loose bark; wash clean with soft soap and water as hot as the hands will bear it; search every corner for insects, and place the Vines reserved for starting in position; wash well or paint the house; examine the drainage and borders, and see that all necessary for their welfare is completed. The inside border of the early Vinery, now ready for starting, should be covered with a bed of leaves and stable litter, turning it occasionally to make the ammonia available; use the syringe twice daily, and keep the temperature at 50° at night, increasing it with sun-heat during the day; where the borders are chambered and heated beneath, the heat should only just be sufficient to warm the pipes. After a growing season the roots will be found close to the pipes, attracted to them by the heat, if previously applied judiciously. Water well inside borders with tepid water about 80°, which operation is most essential in the first growth of the Vine. In cold weather never allow the pipes to give off that odour of heated air, which is so injurious to the Vine. Grapes now hanging should be looked over daily, and all bad berries removed on the first signs of decay; up to the present time the autumn has not been favourable for the preservation of Grapes. A drop of water should not be spilt, nor should plants requiring water be allowed to remain in the same house. Immediately before the fall of the leaf is the most precarious time for them. Where it becomes necessary to fill the houses with plants the Grapes should be cut with a portion of the wood and placed in bottles of water in which some charcoal has been put, in a room with a dry temperature of about 45°. Remove all foliage as soon as a tap of the hand causes it to drop; warm with fire-heat, and air well houses on fine days where fruit is hanging; keep ventilators closed in heavy, damp weather. Where Grapes are intended to hang through the winter, or where early forcing is to take place, outside borders should be protected by wooden shutters or other means that will allow the rain to run off.

Pines.—The second batch of Queen Pines should now be allowed to go to rest by lowering the temperature and keeping them moderately dry at the root; 55° with fire-heat will be sufficient for them. Growth among any kind of Pines should not now be encouraged; on the contrary, the aim should be to keep that which they have made as undisturbed as possible. Continue to give fruits swelling weak supplies of manure water when necessary, and maintain a temperature of about 70° at night, allowing it to rise 10° or so above that during the day. Plants, the fruit of which is just emerging from the socket, should be fully exposed to all the light possible, otherwise, the fruit will come up reluctantly, and deformed development is often the result. Subdue the aridity of the atmosphere by sprinkling the paths with water, and the surface of the plunging material in pits where no paths exist. Avoid syringing overhead. Never let the evaporating troughs become empty.

Peaches.—From trees in early houses from which the foliage has dropped, prune and remove all old ties; wash well as directed for Vines; let all inside walls be properly whitewashed; paint pipes and houses if necessary; if not, clean thoroughly. Take away all the surface soil off the roots, replace it with fresh soil and manure to the requisite height, both outside and inside, and protect the borders as recommended for Vines. Trees in late houses should have the assistance of a brush to remove those leaves that are ready to drop, and all young, green shoots attempting to grow should be at once displayed. Give a little fire-heat by day and a free circulation of air to assist the wood in ripening. In tying in all trees be careful not to lay them in too close, as the result will be weak, unripened shoots.

Kitchen Garden.

Asparagus.—Tops of this will now have turned yellow, and should be removed; but, as in other cases of a similar nature, they ought never to be cut away whilst they have life in them. If there are any weeds on the beds, they should be cleared away. The beds should then have their winter dressing applied. This ought to consist of 3 in. of well-rotten manure evenly spread over the surface. This not only has the effect of enriching the soil, by its fertilising properties being washed into the ground by the rains, but it also protects the crowns from frost; for, although a perfectly hardy plant, yet, like many others under a system of cultivation, it is better not to have the roots exposed to severe frost. If the alleys contain plenty of soil, an inch or two may be thrown over the manure; but the old method of sinking these two deep frequently did much injury to the roots, which grow persistently in a horizontal direction, often extending into the alleys, and when these were cut to such a depth as to throw a considerable portion of soil over the beds, the roots, of course, were more or less injured. The great mistake in the cultivation of this vegetable is in too close planting; two rows are quite enough for a 4-ft. bed, instead of three or four. There is nothing gained by close planting; when plenty of room is allowed, the heads, if they are not so numerous, are double the size, and the beds will last much longer.

Extracts from my Diary.

November 4.—Earthing up French Beans in pots with loam and manure. Grubbing out old Apple trees, and preparing holes for young ones. Getting ice-house cleared out ready for refilling on the first opportunity. Getting frames and lights cleared and washed ready for painting before bad weather sets in. Clearing off flower borders and forking up the ground for fresh flowers.

Nov. 5.—Potting on a batch of Dracænas and Crotons for table decoration. Looking over Calceolaria cuttings and removing any that are damping off, taking off the lights whilst the weather is fine. Hoeing among growing vegetable crops. Taking up and stacking away Salsify and Scorzonera in a cool shed in dry soil. Looking over Grapes in bottles, cutting out decayed berries, and filling up the bottles where required.

Nov. 6.—Putting early potted Hyacinths into gentle bottom-heat to get them forward. Moving large trees from nursery into pleasure grounds, and planting them in prepared holes. Nailing up Ivy and Roses on walls where blown down by wind. Pruning and nailing Morello Cherries on north walls. Turning over Mushroom manure to sweeten.

Nov. 7.—Sowing Mustard and Cress; also French Beans in pots. Planting out Daisies, Silenes, Myosotis, and Wallflowers. Looking over all Cauliflowers, and turning down leaves where required, to protect them, and removing the most forward into the shed. Covering up Endive and tying up Lettuces to blanch. Turning over leaves and long manure for making hotbeds.

Nov. 8.—Looking over fruit-room and clearing away fruits that have begun to rot; also looking over seed Potatoes and removing any that are diseased. Washing plants and paint. Roping Onions, and making labels and pegs.

Nov. 9.—Getting tender plants from pits into Vineries, and placing Strawberries in pots into cold pits. Clearing the leaves off the pleasure ground walks, and rolling the gravel down firmly. Weeding Box edging, and cleaning kitchen garden walks. Nailing Fig trees on walls closely, and covering them over with thatched hurdles, to protect them from severe frost. Watering the Pines all through and tying up any that may require it. Fruit in use for dessert: Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

Potatoes at the Paris Exhibition—"W. W. H.'s" report (p. 382) on the Potato competition at Paris is not quite correct. The highest number of marks in every class was awarded to our collections by the jurors, and the three classes were ultimately blended together when the gold medal was awarded to us.—JAMES CARTER & Co., *High Holborn.*

ROSES.

ROSE GROWING IN FRANCE.

(Continued from page 385.)

PROPAGATION BY LEAF CUTTINGS.—It was the celebrated Agricola to whom is due the discovery that certain leaves when treated like cuttings will produce plants. His first experiments, which were made in 1752, were with Orange leaves. With the Lemon and Orange tribe this method of propagation may succeed well enough, but in the case of the Rose it is altogether different. Rose leaves planted in $2\frac{1}{2}$-in. pots in the frame of a warm propagating house soon form a swelling and produce roots, but at the end of six months, in spite of the development of what appears to be roots, there is not a vestige of a bud to be seen. This method of propagation applied to the Rose tribe produces a result which is more curious than useful, from which fact we are led to conclude that the supposed roots are nothing but prolongations of the fibrous tissue of the leaf.

CUTTINGS STRUCK IN HEAT WITH THE LEAVES LEFT ON.—This method of propagation is largely practised by professional Rose growers. The operation may be performed from the end of July to the end of September, and even during the winter. In certain establishments the propagating house is near the Rose nursery, in which the different varieties are all grouped together. Each plant bears the number belonging to its particular variety in the catalogue, so that the propagator whose duty it is to cut the slips passes from bed to bed, collecting from each of them his bundle of shoots, to which he immediately ties the corresponding number in the catalogue. He lastly wraps them in a damp cloth and deposits them in the entrance of the propagating house. This entrance is a sort of porch, with a second door, which is built either outside or inside the propagating house, so that the two doors are never open at the same time. It also serves as a kind of workshop, in which all the necessary appliances for propagation by cuttings are kept, such as prepared heath mould, thumb pots of different sizes, a set of punches for numbering the labels, a mallet for striking them, and the lead labels themselves. These labels are cut into the form of a long triangle, as shown in fig. 9, the base being $\frac{1}{2}$ in. in width, and the sides $1\frac{1}{2}$ in. in length. The number is struck upside down, for a reason which will be explained presently, on the larger end of the label, which is stuck into the soil with the sharp end downwards. A tray, too, is necessary for carrying the potted cuttings backwards and forwards. It should be made of Pine, and should measure 2 ft. 4 in. in length by 1 ft. 4 in. in width, with edges $1\frac{1}{2}$ in. high on the long sides, and 6 in. high on the narrow ones. The edges on the narrow sides are provided with holes, so that they serve for handles for carrying the tray to and fro. The shoots are cut up into slips, each having three leaves and, consequently, three buds; the joint of the lowest slip is allowed to remain on after having been pared with the pruning knife. The shoot is cut at right angles to its axis, about the 20th of an inch below a bud. The two upper leaves are generally cut off, as they would be inconveniently in the way when the cuttings were placed under the bell-glass. Each slip is placed in the middle of a small pot of about $1\frac{1}{4}$ in. in diameter and filled

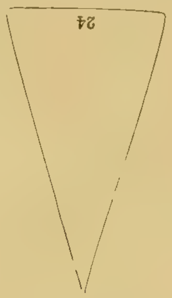


Fig. 9.—Label.

with heath mould, into which it is thrust to the depth of about ½ in., the mould being pressed round it firmly to keep it in its place. If we use pots of 1½ in. or 1¾ in. in diameter, we place two cuttings in each, inserting them at a distance of about ½ in. from the edge, as shown in fig. 10; if we use pots 2½ in. in diameter we may plant three cuttings in them, in the form of an equilateral triangle. A lead label, bearing a number, is stuck into each pot, point downwards, and bent over the edge, so that it may not be accidentally misplaced. This is the reason why the number, as shown in fig. 9, is reversed. The pots are then watered and carried on the tray into the propagating house. The cuttings are placed in the frames and covered over with bell-glasses, as described under the heading of herbaceous cuttings. Where two or more varieties are placed under the same bell-glass the pots containing the same kind are placed together and distinguished from their neighbours by a piece of straw or Rush stuck into the mould. The cuttings are taken from under the bell-glass as soon as they have struck, and ought to be at once replaced by others, so as to make the work continuous. The rooted cuttings are placed in cold frames, which are protected during the winter by being surrounded with stable litter and covered over with straw mats. If the mould in the frames be light, the pots are buried in it up to the rim, but if it be heavy it must be covered first with a layer of fine sand. During the winter the cuttings require but little attention; they must, however, be kept clean, that is to say, the Mosses which spring up on the surface of the mould must be removed; they must also be kept very moderately watered and exposed to the air from time to time whenever the weather is fine enough.

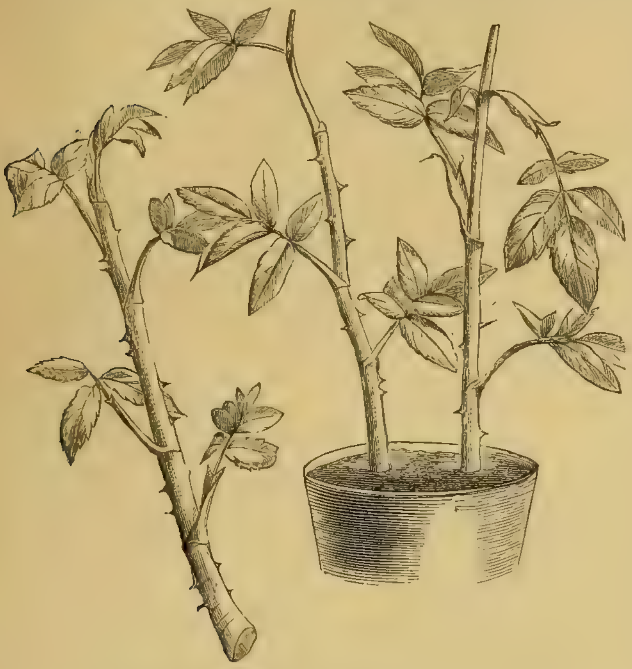


Fig. 10.—Cuttings struck in heat with the leaves left on the shoots.

Treatment of Cuttings Struck in Heat under Bell-glasses.—The cuttings must be examined every day, the bell-glasses wiped, and those pots watered which seem to require it. All dry leaves and dead cuttings, that is to say, those which turn black at the lower end, must be cleared away. The watering must be performed with a small watering pot with a long spout ending in a pipe of about 1-6th of an in. in diameter, into which two or three pieces of straw have been inserted so that the water may flow out drop by drop; the dead leaves must be removed with a pointed stick or piece of iron wire, so as not to disturb the cuttings. It often happens that yellow or black fungi will spring up in the tan, which, if not checked, spread very rapidly, and will at last extend to the soil round the cuttings. The best remedy is to remove the pots which are nearest to these growths and stir up the tan, removing those portions in which these troublesome visitors are growing. If the evil be widely spread, the only thing to do is to remove all the bell-glasses and renew the whole of the tan in the frame. If green fly make its appearance on the young plants, they must be well fumigated at night before the frames are covered over with the straw mats. It is hardly necessary to remind the Rose grower that, as the cuttings increase in size, they must be removed to larger pots. It sometimes happens that mites or very small worms will invade the soil in the pots. In this case, the mould must be entirely renewed and the pots replaced under the bell-glasses. The propagating house should be kept at a temperature of from 60° to 70° Fahr., and should be well shaded with straw mats or other appliances for keeping out the direct rays of the sun, which are fatal to cuttings. The straw mats, therefore, ought to be used whenever the sun is shining, and taken away every evening to be replaced in the morning.

Influence on the Cuttings of the Conditions under which they are Grown.—If we attentively investigate the various conditions under which cuttings struck on different systems are grown, we shall find reasons for everything, and may easily discover which system is best suited to our particular requirements. Cuttings without leaves struck in the cold during the autumn are generally successful and form healthy Rose bushes; these slips throw out roots during both autumn and winter. The bud during all this time appears to make no progress. It is, however, growing stronger; and when the genial warmth of spring is felt, it bursts into a shoot and finds a root system already provided, which, keeping pace with the leaves, maintains the proper balance between the subterranean and aerial growths. The successive development of the two parts of the plant depends on the conditions under which the cuttings are struck. In the autumn it is clear that the soil is still warmed by the heat of the summer. The air, on the other hand, is kept cool by cold fogs and longer nights; hence, in striking a cutting at this time of the year, the heat of the ground draws down to the portion under ground the whole of the sap in the shoot, and, by bringing it into contact with the ingredients of the soil, thereby favours the formation of the callus and the rootlets. During this time the circulation is checked in the upper part of the cutting by two causes; first of all by the temperature of the air being too low to stimulate the sap, and secondly, by the temperature of the soil being higher, thereby drawing the sap downward. We might almost say that at this time the only part of the cutting which is living is the lower part. When the spring arrives the conditions are reversed, and the aerial portion of the cutting becomes the most vigorous; in fact, the current changes and the sap flows upwards. With cuttings struck under bell-glasses matters progress more rapidly, but not so surely. The lower end of the slip, being placed in a frame which has a temperature of about 60° Fahr., finds sufficient heat to develop its rootlets, but the upper portion is in a medium, whose temperature is from 78° to 86° Fahr., which draws up the sap, and the formation of the leaves goes on much more quickly than that of the roots, hence it arises that we frequently see cuttings with well-grown heads, but which are, nevertheless, very weak. The underground half of the cutting can only furnish all that is required of it by the upper portion when it is allowed to grow in its own natural way without any adventitious aid. It very often happens that cuttings struck under bell-glasses, after having thrown out a number of beautiful buds, fade away and die. If we examine the lower ends of such cuttings, we shall find that they have either too few roots or else none at all, that is to say, that the growth above ground has predominated over that below ground, and the equilibrium has been broken. We may learn from this, therefore, that when striking cuttings under bell-glasses, we must not allow the buds to develop themselves too rapidly. This may be accomplished by so regulating the temperature of the soil in the frame, and that of the air under the bell-glass, that the lower part of the slip may develop itself at the same rate as the upper part. Practical Rose growers are well aware that cuttings taken from the lower part of the shoot are more easy to strike than those taken from the middle, and these latter again than those taken from the upper part. This fact confirms what we have just said concerning the balance which should be kept up between the upper and lower parts of the cutting, and also shows that it is better for the lower part to develop itself before the upper part. It is well known to every one that the eyes at the base of the shoot are but slightly developed; they are, in fact, almost dormant; and if things follow in the natural order, the eyes at the top of the shoot develop themselves first, and then those in the middle, in accordance with the natural wants of the plant. The eyes at the base seem to constitute a kind of reserve, which only develops itself in extreme cases. It follows from this that these eyes not being sufficiently developed, are but little influenced by external circumstances. They draw towards them but little sap, and the lower part of the shoot has plenty of time to develop an abundant mass of rootlets, so that later on when the bud opens it finds a good supply of roots to feed it. There is another reason why slips taken from the lower part of the shoot should succeed better. It is because their wood is more mature, so that it can take up the supply of sap and elaborate it without any danger of becoming rotten, as is the case with cuttings with imperfectly developed wood.

Layering in Trenches.—This method of propagation is adopted in the case of those varieties of the Rose which are difficult to strike from cuttings, and which generally furnish stocks on which to graft the more delicate kinds. They include the Quatre Saisons or Royal Perpetual, Manetti, Hundred-leaved Rose, the Burgundy Pompon, and several Damask Roses. Roses chosen as parent stocks ought to be free stocks or, at any rate, grafted level with the soil. They should be at least two years old, and be provided with good roots and of vigorous habit generally. They are planted in small, open beds, each bed holding only one variety. The ground is divided into beds 1 ft. 4 in. wide and 2 ft. 4 in. long. The soil must be dug down to a depth of 1 ft., the earth being thrown out on the space between the beds so as to form a mound. The trench being thus opened, the bottom is turned over thoroughly, and we may at once proceed to plant out the parent stocks, an operation which is generally performed in November. The roots are pruned, the stems are cleaned, and the trees are planted in the middle of the trench, keeping them from 2 ft. to 1 ft. 4 in. apart, according as we have to deal with a long or short-branched variety. The planting out being finished, the soil at the bottom of the trenches receives a dressing of well-decayed night soil or stable manure brought to the spot in baskets carried on men's backs. One basket-load of manure is divided into three heaps, 2 ft. from each other, which makes one basket-load for every 6 ft. run of bed. The manure being spread over the ground, things are allowed to remain undisturbed until the spring, when the stems of the trees are cut down level with the ground. Every time that the soil is dug up a little mould is taken from the top of the mounds and thrown round the parent stocks. By this means they are preserved from the effects of drought. In the spring of the second year and before the rising of the sap takes place, the trenches are filled up with the earth forming the mounds, an operation which provokes the formation of roots round the collar of the young shoots. During the summer and autumn the usual forking and weeding required by the season takes place. In the month of November the layer is separated from the parent stem. For this purpose the parent plant is partially uncovered and the layer is cut off above the part which has taken root, taking care to leave a portion of the shoot projecting beyond the root and bearing two or three eyes. It is from these eyes that the future shoots will spring, which, after they have been allowed to grow freely during the first year, must be pruned down and cut off altogether at the end of the second year. This kind of work may be carried on continuously for twelve or fourteen years, and will yield a crop of well-rooted layers every two years if we manure the ground once every three years. By planting two beds at an interval of twelve months, we may have a yearly crop of layers. It may be added that the mounds between the beds may be utilised for cultivating small vegetables, such as Garlic, Onions, salad, &c., but only during the first two or three years. The plants we use for layering are sent to market under the name of *chenevottes*, packed in bundles of from 100 to 500, and sold at the price of from 10s. to 16s. per thousand. In the neighbourhood of Paris it is the commune of Fontenay-aux-Roses which has the speciality of this kind of culture. The *chenevottes*, when taken out of the ground, are potted or else placed in a greenhouse. In the first case they are grafted with the scions of new varieties; in the second case, they are planted out in beds of four Roses, at a distance of 1 ft. 2 in. from each other in every direction, after which they are shield-budded and yield dwarf Rose trees, which throw out fewer shoots than those which have been grafted on the Brier.

Layering with Notched Shoots.—This method of layering has been applied with great success to climbing Roses, whose annual shoots are from 3 ft. to 10 ft. in length. When grown on a commercial scale the parent plants are set in beds at a distance of from 4 ft. to 6 ft. 8 in. from each other, according to the variety. In the spring immediately following the plantation the parent plants are pruned down level with the earth, in order to obtain a supply of healthy shoots, which will develop themselves during the summer and autumn. When the cold weather sets in these shoots are covered over with straw to protect them from the frost, not that it will kill them, but it may possibly so alter the condition of the woody fibre as to stop its growth and endanger the success of the layering. In the month of April or May, when the frost is no longer to be feared, and the sap has commenced its upward movement, we proceed as follows: We open round the parent stock a trench about 1 ft. 4 in. wide and 10 in. deep, the depth depending on the quality of the soil. A shoot is then bent down to the bottom of the trench, making it describe a somewhat sharp curve. The shoot must be kept in its proper position by a wooden hooked peg about 8 in. long, and is notched half-way through the wood at the bottom of an eye placed on the under side and on the lowest part of the curve. The hooked peg is driven into the ground over the middle of the curved shoot, far enough to keep the layer firmly in its place, after which the whole is covered up with mould. This operation is repeated all round the Rose tree, as long, in fact, as there are any shoots to layer. In order to avoid the shoots crossing each other and becoming entangled, the shoot which presents itself most naturally to the operator is the one chosen, and a space of from 2 in. to 3 in. should be left between each of the layers. The layering being finished, the trench is filled up either with the earth of the bed itself, if it be sufficiently light and rich for the purpose, or, what is much better, a compost made of equal parts of sand and well-rotted leaves, or equal parts of sand and old night soil well deodorised. When the hole has been filled up to the level of the surrounding soil, a little hillock of earth is formed round the layers so as to keep in the water with which they are watered. At the point where the shoot issues from the earth a stick is thrust in vertically, against which the shoot is trained by being tied with bast, Rush, or Willow. The layers will have become sufficiently rooted by the autumn if during the summer we give them the attention that all plants require to make them grow luxuriantly.

J. Lachaume.

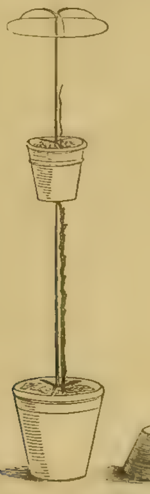
Crimson and Pink China Roses.—These are, perhaps, the most continuous flowering varieties of the Rose that we possess; for months they are continuously a sheet of bloom. I am well aware that the individual blossoms are not to be compared with those of Hybrid Perpetuals, but for isolated spots in pleasure grounds I feel sure that beds of these old-fashioned Roses will well repay the minimum of attention which they require.—J. Groom, *Linton Park.*

Roses in Autumn.—The beautiful collection of Roses exhibited by Messrs. Wm. Paul & Sons at the last meeting of the Royal Horticultural Society served to show the advantages gained by planting suitable kinds in every available space close to greenhouse walls and similar places. It was from such positions as these that the blooms alluded to were cut. The plants cover the low bare walls during summer, and in autumn yield an abundance of buds. The kinds shown were Safrano, Souvenir de la Malmaison, the beautiful snow-white Niphetos, so much valued in London markets for bouquets, Isabella Sprunt, Marie Van Houtte, and several other good autumn-blooming kinds.—S.

THE FRUIT GARDEN.

POT VINES FOR TABLE DECORATION.

The Black Hamburgh exhibited by Mr. Sage, of Ashridge Park, the other day at South Kensington was admitted to be one of the best fruited and most ornamental of pot Vines—having regard to the small size of the pot in which it was growing—perhaps ever staged. Mr. Sage was kind enough to show me a rough sketch of the iron support which he used in the production of plants of this kind, and from it the accompanying woodcut has been prepared. Ordinary well-ripened pot Vines in 12-in. pots are used, and before they are started the stout iron support seen in the figure, having three stout claws, is firmly fixed into the pot or in the ground on one side of it. On the top of the support is a ring or loop just large enough to grip closely nearly up to the rim an 8-in. pot. I cannot give the height of the support as used at Ashridge, but it is probably about 2½ ft. in height. The hole at the bottom of the upper pot is enlarged, and the top of the Vine is carried through it; then the pot is filled with soil. A small umbrella trellis, about 1½ ft. in height, is then introduced and secured into this upper pot just as the strong support is in the lower one, and the remaining or fruiting portion of the Vine is secured to the trellis upright and trained round beneath the top.



Mode of Preparing Vines for Table Decoration.

The Vine is then ready to be pushed into growth. Above the small pots all shoots are retained and tied up, and every encouragement is given to the production of good fruit and foliage. No doubt it is desirable to have a joint in the soil in the top pot, as rooting may be encouraged more freely. Of course in good short-jointed Vines this would be difficult to avoid. To many there may be nothing new in all this; still, new or old, it is well worth the attention of all interested in Vine culture, especially when such good results can be had as are obtained at Ashridge. It is well known that when Grapes are ripened but a comparatively small amount of root action will suffice to keep them sound and plump for a long time. Thus it is that after the crop on the pot plant is ripened it does not suffer when the necessary severance in the stem beneath the upper pot is effected. Mr. Sage had a plain, useful wooden stand into which to drop these small pots after severance to keep them from toppling over, and thus enable them to be carried about, or be placed on the table or sideboard in perfect safety.
A. M.

Mixed Cropping in Orchards.—In this part of Kent an extensive area is devoted to orchards which are cropped on the mixed plan. In this way the rows of standard Apples and Pears are planted at double the ordinary distances apart, and rows of dwarf spreading bush Apples or Pears are planted alternately; these again have rows of Kentish Cob nuts or Filberts planted between them, and Gooseberries or Currants in the intervening spaces. Under this system good crops of some of these fruits are ensured in all seasons, and as Gooseberries are mostly gathered green, the shade, while protecting them from frost, does not injuriously affect them. The Black Currant is also in great request for preserving purposes. The bush-trained Apples, Nuts, &c., are kept down quite low, and form open, wide-spreading heads. The centres of the standard trees are well thinned out, but the outer young wood is left tolerably thick, forming a regular umbrella-shaped head, and the crops they bear amply testify to the suitability of the practice. Grafting and double grafting of approved market sorts are largely practised in this district, and on our strong, clayey loam, resting on ragstone foundation, the trees attain large proportions, their stems being more like those of forest trees than of ordinary fruit trees. Cherries thrive best in the lighter soils on the elevated portions of hillsides.—J. Groom, *Linton, Maidstone.*

THE BLACK HAMBURGH AS A LATE GRAPE.

Everybody admits that the Black Hamburgh is the best early spring and summer Grape, but it has more claim to be called a late Grape than many suppose. We have always a supply of good, plump Hamburghs up to the new year, and every one who tastes them during November and December says they are superior in flavour to Lady Downes, Alicante, Gros Colman, or any other Grape, and I am sure that those who are well acquainted with Grapes will readily admit that this must be the case. Some think that thick-skinned Grapes are the best keepers, but I do not find that they resist damp better than thin-skinned ones. I have seen Lady Downes damp or rot as freely as any other Grape, including the Black Hamburgh. I am strongly of opinion that it is altogether a mistake to grow such Grapes under the idea that they keep best in winter, and I am sure that those who have tasted a Black Hamburgh at Christmas or the new year in as fine a condition as it could be had in August, would, at least, try to obtain a few bunches of it at that season. Black Hamburghs, to come in at all late, may be cultivated with very little expense, as they do not require to be started into growth with much fire-heat in spring, nor do they require much of this at any time throughout the summer season. The bunches should be well thinned out, and the crop must not be an excessively heavy one, unless it be under the care of an experienced cultivator who can bring it to perfection. One of the main points to ensure late keeping in the Hamburgh is having the fruit thoroughly well matured, and after that is accomplished little further difficulty need be experienced.
Cambrian.

Dickson's Exquisite Melon.—This Melon was introduced for the first time last autumn with a very high character, which it appears to have well maintained. So distinct is it from other Melons, that it may possibly prove the type of a new and distinct race of this useful fruit. The variety in question has with me proved somewhat small, each fruit averaging about 1½ lb. It is round and handsome in form, very beautifully netted, and in addition to this it has bright green lines extending from the apex to the stalk, dividing, as it were, the fruit into sections, such as may be seen in the Orange when the peel has been removed. The rind is very thin, and the flesh green, juicy, and yet firm; the seeds are comparatively few, and occupy but a very small space, so that there is considerable depth of flesh. The flavour is so exquisite that it well deserves its name, and it has also the very desirable quality of keeping longer in good condition after being cut from the plant than any other variety with which I am acquainted. The habit of the plant is vigorous without being too robust, rendering it very suitable for training on a trellis near the glass. The fruit, as has been already stated, being somewhat small, requires little, if any, support. Indeed, the size of the fruit may by some be considered objectionable, although I am by no means inclined to think so, as one fruit is sufficiently large for a small party; while, for a large one, three or four fruits may be placed upon a dish. This would give variety to the dessert table, and at the same time need not exclude from it a fruit of larger dimensions of some other variety.—P. Grieve, *Culford, Bury St. Edmunds.*

Coe's Golden Drop Plum.—This Plum is not half so much grown as it ought to be. When half ripe, if properly preserved and sent whole to table, it makes the choicest of winter dessert, and when ripe nothing is more useful. I am just now (October 20) having glorious dishes daily of it, slightly shrivelled. It is simply a bag of honey. My trees are growing both against west and east walls, and in both places they do well.—R. Gilbert, *Burghley.*

Sweet Chestnuts.—The fruit of the Sweet or Spanish Chestnut is very plentiful hereabouts this autumn, and we find it so useful for dessert that it would well repay anyone to plant and cultivate a few trees to supply fruit for this purpose alone.—Cambrian.

THE HIGH WOODS IN TRINIDAD.

My first feeling on entering the high woods or primæval forest, as it is called here, was (says Canon Kingsley in his "At Last") helplessness, confusion, awe, all but terror. One is afraid at first to venture in fifty yards. Without a compass or the landmark of some opening to or from which he can look, a man must be lost in the first ten minutes, such a sameness is there in the infinite variety. That sameness and variety make it impossible to give any general sketch of a forest. Once inside, "you cannot see the wood for the trees." You can only wander on as far as you dare, letting each object impress itself on your mind as it may, and carrying away a confused recollection of innumerable perpendicular lines, all straining upwards, in fierce competition, towards the light-food far above; and next of a green cloud, or rather mist, which hovers round your head, and rises, thickening and thickening to an unknown height. The upward lines are of every possible thickness, and of almost every possible hue; what leaves they bear, being for most part on the tips of the twigs, give a scattered, mist-like appearance to the under-foliage. For the first moment, therefore, the forest seems more open than an English wood. But try to walk through it, and ten steps undeceive you. Around your knees are probably Mamures (Carludovica), with creeping stems and fan-shaped leaves, something like those of a young Cocoa-nut Palm. You try to brush through them, and are caught up instantly by a string or wire belonging to some other plant. You look up and round: and then you find that the air is full of wires—that you are hung up in a network of fine branches belonging to half-a-dozen different sorts of young trees, and interwined with as many different species of slender creepers. You thought at your first glance among the tree-stems that you were looking through open air; you find that you are looking through a labyrinth of wire, rigging, and must use the cutlass right and left at every five steps. You push on into a bed of strong Sedge-like Sclerias, with cutting edges to their leaves. It is well for you if they are only 3 ft. and not 6 ft. high. In the midst of them you run against a horizontal stick, triangular, rounded, smooth green. You take a glance along it right and left, and see no end to it either way, but gradually discover that it is the leaf-stalk of a young Cocorite Palm (Maximiliana Caribæa). The leaf is 25 ft. long, and springs from a huge ostrich plume, which is sprawling out of the ground and up above your head a few yards off. You cut the leaf-stalk through right and left, and walk on, to be stopped suddenly (for you get so confused by the multitude of objects that you never see anything till you run against it) by a grey Lichen-covered bar, as thick as your ankle. You follow it up with your eye, and find it entwine itself with three or four other bars, and roll over with them in great knots and festoons and loops 20 ft. high, and then go up with them into the green cloud over your head, and vanish, as if a giant had thrown a ship's cables into the tree tops. One of them, so grand that its form strikes even the negro and the Indian, is a Liantasse (Schnella excisa). You see that at once by the form of its cable—6 in. or 8 in. across in one direction, and 3 in. or 4 in. in another, furbelowed all down the middle into regular knots, and looking like a chain cable between two flexible iron bars. At another of the loops, about as thick as your arm, your companion, if you have a forester with you, will spring joyfully. With a few blows of his cutlass he will sever it as high up as he can reach, and again below, some 3 ft. down; and, while you are wondering at this seemingly wanton destruction, he lefts the bar on high, throws his head back, and pours down his thirsty throat a pint or more of pure cold water. This hidden treasure is, strange has it may seem, the ascending sap, or rather the ascending pure rain-water which has been taken up by the roots, and his hurrying aloft, to be elaborated into sap, and leaf, and flower, and fruit, and fresh tissue for the very stem up which it originally climbed; and therefore it is that the woodman cuts the Water Vine through first at the top of the piece which he wants, and not at the bottom; for so rapid is the ascent of the sap that if he cut the stem below, the water would have all fled upwards before he could cut it off above. Meanwhile, the old story of Jack and the Bean-stalk comes into your mind. In such a forest was the old dame's hut; and up such a Bean-stalk Jack climbed, to find a giant and a castle high above. Why not? What may not be up there? You look up into the green cloud, and long for a moment to be a monkey. There may be monkeys up there over your head, burly red Howler (Mycetes), or tiny peevish Sapajou (Cebus), peering down at you; but you cannot peer up at them. The monkeys, and the parrots, and the humming-birds, and the flowers, and all the beauty, are upstairs—up above the green cloud. You are in "the

The High Woods, Trinidad.

empty nave of the cathedral," and "the service is being celebrated aloft in the blazing roof."

We will hope that as you look up, you have not been careless enough to walk on; for if you have you will be tripped up at once: nor to put your hand out incautiously to rest it against a tree, or what not, for fear of sharp thorns, ants, and wasps' nests. If you are all safe, your next steps, probably, as you struggle through the bush between tree-trunks of every possible size, will bring you face to face with huge upright walls of seeming boards, whose rounded edges slope upward till, as your eye follows them, you find them enter an enormous stem, perhaps round, like one of the Norman pillars of Durham nave, and just as huge; perhaps fluted, like one of William of Wykeham's columns at Winchester. There is the stem; but where is the tree? Above the green cloud. You struggle up to it, between two of the board walls, but find it not so easy to reach. Between you and it are half-a-dozen tough strings which you had not noticed at first—the eye cannot focus itself rapidly enough in this confusion of distances—which have to be cut through ere you can pass. Some of them are rooted in the ground, straight and tense; some of them dangle and wave in the wind at every height. What are they? Air-roots of wild Pines (Tillandsia), or of Matapalos, or of Figs, or of Seguines (Philodendron, Anthurium, &c.), or of some other parasite? Probably; but you cannot see. All you can see is, as you put your chin close against the trunk of the tree and look up, as if you were looking up against the side of a great ship set on end, that some 60 ft. or 80 ft. up in the green cloud, arms as big as English forest trees branch off; and that out of their forks a whole green garden of vegetation has tumbled down 20 ft. or 30 ft., and half climbed up again. You scramble round the tree to find whence this aerial garden has sprung; you cannot tell. The tree-trunk is smooth and free from climbers; and that mass of verdure may belong possibly to the very cables which you met ascending into the green cloud 20 yards or 30 yards back, or to that impenetrable tangle, some 12 yards on, which has climbed a small tree, and then a taller one again, and then a taller still, till it has climbed out of sight and possibly into the lower branches of the big tree. And what are their species? What are their families? Who knows? Not even the most experienced woodman or botanist can tell you the names of plants of which he only sees the stems. The leaves, the flowers, the fruit, can only be examined by felling the tree; and not even always then, for sometimes the tree when cut refuses to fall, linked as it is by chains of Liane to all the trees around. Even that wonderful Water Vine which we cut through just now may be one of three or even four different plants.

FOREST WORK FOR NOVEMBER.

Open weather still favours the operations of the tree planter, and the fall of rain has enabled holing to be continued in soils where, from the dryness of the autumn, such works had become almost an impossibility. Most deciduous trees are now fit for removal, and no time should be lost before getting them into their new quarters. The gradual hardening or acclimatising of early-removed trees is highly conducive to their future progress; and this applies more especially to those which have been taken from warm nurseries. Should frosts set in transplanting must be suspended, as all young trees receive a severe check from being removed during frosty weather.

Allotments of coppicing and underwood for sale by public auction should now be made. We have invariably found that small lots, by inviting more competition, command relatively higher prices than larger ones. Without placing any unnecessary restrictions upon the purchaser, the vendor should protect himself by clauses sufficiently stringent to insure good workmanship—early cutting from the stool, and removal from the wood within a reasonable time.

The future crop depends so much upon the time and mode of cutting from the stool, that this is a point deserving especial attention. If cut too early the bark is apt to separate from the wood and admit water during the winter, thus checking the development of adventitious buds. Similar results follow a cutting made during severe frosts. Experiments have shown that the best crop of young shoots follows a cutting made between the middle of February and the latter part of March. Much, however, depends upon the season and the age of the stools. The younger plantations should always be cut first. Falling is generally continued from early in November until the end of March, and by the first week in April it should cease.

Upon all moderately dry soils, which alone are fitted for the growth of the best kinds of underwood, the stools should be cut almost close to the ground. This ensures a good crop of shoots from the dormant buds, and as these spring from near the surface of the soil they are generally erect in their growth, and at the same time they help to extend the stool. All the smaller produce should be cut with a light and keen handbill; poles up to 5 in. or 6 in. diameter with a sharp axe; and all beyond that size with the cross-cut saw. Small stools upon light soils require especial care, as the blows of a heavy, blunt axe sever the fibres of the roots, loosen the entire stool, and destroy the continuity of the dormant buds, which proceed from the medullary rays. All finished stools should be rounded off, that no water can lodge upon them; this may be done with the axe, but it is much better finished with the adze. The bark should adhere firmly all round the edge of the surface.

To insure early removal, mark out good clearance roads. In Kent, we "brush" or bottom these with small faggots tightly bound up, at the rate of about forty to the rod, laid transversely to the line of road. Such roads will carry heavy loads of poles and faggots during the winter, as well as the timber in the spring.

Plantations may now be thinned, and where Birch, Beech, Chestnut, Alder, &c., are laid up for some time to become partly seasoned in the logs, they may at once be stripped of their bark. Ash need not be felled until after the middle of the month. Where it is intended to grow timber of great length, care should be taken not to destroy the leaf-canopy. Where clean-grown timber is also required the branches should always be cleared from the trunks of the standards within two years after the thinning; these rob the crown and produce stag-headedness.

Collect leaves for the nursery; also Ash-keys, Alder seeds, the berries of the Mountain Ash, and such other seeds as ripen during the month; also continue drainage and clear out all watercourses. The seeds of many of our native trees may be sown as they ripen, but the same rule does not apply to exotics. A. J. Burrows.

FORMAL OUTLINES TO SHRUBBERIES.

In the first formation of shrubberies a formal outline may be excusable, but the sooner the shrubs are permitted to grow over and through it, unless it be bounded by a path, the better. I have often thought the common practice of leaving a marginal border round masses of shrubs for flowers a mistaken one; too often, when such is the case, they present but a littery, rubbishy appearance. Can anything add to the beauty of a well-developed shrub springing direct from the fresh green turf? I think not; therefore let the Grass grow close up to the shrubs, without any bare soil intervening, and the different habits and styles of growth of the different shrubs in a well-arranged group will always give that variety of outline which is so pleasing. Of course, a little pruning may be necessary. Art may be permitted to mend Nature, so far as to stop or remove a robber shoot that is likely to destroy the balance of power in the plant. This is requisite in almost every form of tree or shrub growth. In the Grassy glades that intersect masses of shrubs, and which, when well and tastefully arranged, add so much to their picturesque appearance and beauty, groups of the more striking herbaceous plants may be used with good effect. Thus, a group of herbaceous Pæonies planted out in the Grass a few feet from its margin, in front of a mass of shrubs, has a far better effect than when growing in a crowded condition under or among the shrubs themselves. And the same idea could be worked out with many other plants, such as hardy Fuchsias, the autumn-flowering Anemones, and notably the Polygonums, such as Sieboldi and others. This appears to me to be the true way of bringing out the decorative force of any handsome or striking plant, but it must not be overdone. A single group of any suitable subject, well placed, would have a very striking effect; but to overtask the turf in this way would be ruinous. The great evil often noticed in the treatment of any given object is carrying the idea too far. It does not follow because a particular group in a certain position may look well and pleasing, that an increase in the number of such groups would have the same effect. E. Hobday.

Acacia Decaisneana.—Of this rosy form of the common Acacia there is a specimen in the Imperial private gardens at Vienna about 40 ft. high. It is said to be very beautiful in flower at this size, and is evidently a most vigorous and hardy tree.

Paulownia imperialis as a Fine-foliaged Plant.—This well-known tree is planted singly and in small groups on the Grass about Vienna, cut down every year, and confined to one or two stems when it grows in the summer. The effect is quite as good as the best of the so-called sub-tropical plants with which so much trouble and expense are taken in hothouses.

ANSWERS TO CORRESPONDENTS.

Alnwick Seedling Grape.—Allow me to say, in reply to Mr. Groom (p. 386) that this Grape possesses excellent qualities, and must occupy a prominent place amongst late varieties. It has fruited for the first time with us in a late house where Lady Downes, Black Alicante, Gros Colman, and Barbarossa are the principal varieties, and in my estimation it far surpasses all of them. In growth, it resembles Lady Downes, growing away freely and clean, and it possesses a strong constitution. If its fruit hangs as long as that of its associates, it must drive them out of the market. Although a thick-skinned Grape, it is thinner than those named. It has berries almost as large as those of Gros Colman, but they are oval in shape. As regards colour and bloom, it has surpassed anything we have had, not even excluding the finest Alicantes.—J. Hunter, *Lambton Castle.*

Planting Box Edgings.—When is the best time to plant Box edgings? and when should existing ones be cut? [Any time between January and March is the best season to plant Box. It should be dug up and pulled into small pieces, each having a few fibrous roots attached to it. All strong roots should be shortened, as should also the tops. Put a little good soil to the roots at planting time. Trim existing edgings after severe frosts are over in spring.—S.

Medlars.—What is the best method of keeping Medlars? I always find that they get mouldy on the end of the stalk, and the fruit itself turns sour. This occurs before they are really ripe. When ought they to be picked?—F. W. [Let them hang on the trees until sharp frosts are likely to occur, then gather when quite dry, and place them in single layers on wooden shelves in a dry, airy, cool room or loft.]—S.

Shelves for Fruit Rooms.—What are the best shelves on which to place fruit? I have been informed that they should be strips of wood placed ½ in. or ¾ in. apart, and bevelled to an edge, so that very little of the fruit should touch the wood. Should the shelves be painted? If so, is white the best colour?—E. A. [The shelves you name are the best you can employ. They may be made of any kind of hard wood Do not paint them or put straw on them, as both give an unpleasant taste to the fruit. The latter should be laid on the bare shelves in single layers.]

Sowing Sloes.—When should I sow these to make cover in an Oak wood? and at what depth?—A. [Gather the fruit when ripe, and place them in dry sand in a box or tub till spring, when the flesh can be easily rubbed from the seeds. Sow at a depth of from 3 in. to 4 in. in drills in fine soil.—W.]

Plumbago capensis.—"W." (p. 367) labours under a slight misapprehension, as the climate at Vienna is much more severe than anything we know of in England. The plants in question are, doubtless, taken up for the winter, as the plant is somewhat tender, and suffers at times even at Cannes and Nice.—E. H. W.

Cracked Pears.—*C. H. D.*—The peculiar cracking and withering up of your Pears are due to the want of a proper flow or supply of sap in the tree; want of moisture at a certain stage of growth makes the cuticle or skin contract, whilst a flush following makes it crack. Get the tree into proper health, and cracking will not occur.—B.

Fine Pyramidal Oak (p. 366).—The oldest tree of this Oak with which I am acquainted stands in a forest near Babenhausen, in Bavaria. Its height is about 100 ft., the branches beginning about 30 ft. above the ground. Another, the produce of a graft from it, stands in Wilhelmshöhe Park, near Cassel, in Prussia. Its height is about 100 ft., and its first branches are 6 ft. above the ground.—C. W., *Chester.*

Eucalyptus globulus.—Allow me to say in answer to Mr. Moggridge (p. 366) that we have several examples of this Gum tree planted out oere. Some put out four years ago are close upon 30 ft. high, but they are so slender that all of them require supports. Would it be advisable to head them back, in order to make them more bushy, for as they now are it is evident that they will never support themselves.—W. Watson, *Eaglehurst, Fawley, Hants.*

—— In answer to Mr. Moggridge, let me say that the species of Eucalypti that grow at high elevations in Tasmania and Australia (Victoria) that came under my notice were—E. coriacea, a comparatively small tree with large and leathery leaves. This grows at an altitude of 4000 ft., and, therefore, should be hardy. E. Gunni, also called montana, grows at a somewhat lower elevation, and becomes a fine tree 100 ft. high; its leaves are rather small, but the flowers are pretty in a mass. E. amygdalina is probably the next hardiest, growing as it does high up on the flanks of Mount Kosiusco, in the Australian Alps, where it has been measured, and found to have exceeded 400 ft. in height. It is a truly magnificent tree, but it must be borne in mind that it is only where shelter can be obtained it can show its columnar trunk towering aloft (perhaps 150 ft. before its first branch) to perfection, and that the peculiar beauty of a well-grown Eucalyptus lies in its smooth dove-coloured, or, as it may be in other kinds, Apricot-coloured or black trunk, looking like a column of some vast temple. E. viminalis stands wet so well that it is worth a trial; its leaves are Grass-green in autumn, but its growth is ungainly. All these are, to my mind, more really worth growing in England, where we have so many dense-foliaged trees than the famed E. globulus, whose virtue consists in having denser foliage than other sorts when young, but when old is so ungainly as to lose all beauty; indeed, I am at a loss to understand its popularity when there are so many other kinds superior in beauty and nearly as quick growing, while, for hardiness, it ranks among the lowest, being found only in the richest and warmest valleys in Tasmania, and it is abundant in Queensland, where the climace becomes tropical. For information on such points Baron Von Mueller, now, I understand, reinstalled at the Botanic Gardens, Melbourne, is able to give detailed accounts better than any one else. Seeds of all the best known kinds of Eucalypti can be obtained from Mr. C. F. Creswell, who has establishments at Hobart Town, Melbourne, and Sydney, but I do not know if they can be obtained in England.—E. H. Woodall.

Town Gardening.—Would you kindly give me some instructions as to what plants would be most suitable for growing in a small "back green" in Edinburgh which has an open, north exposure. It is bounded by three dead walls and the house wall, which unfortunately shades it from the sun till about noon. Already Ivy has been planted on the walls, and a strip 3 ft. wide could be dug round the walls for herbaceous plants. The soil is rich black loam, and Grass grows quite well in it; would there be any use trying some Roses on the south or west wall?—G. K. [Try Michaelmas Daisies, such as Aster Novæ Angliæ, Amellus, bessarabicus, and lævis, Pompone Chrysanthemums, Geranium sanguineum, Christmas Roses, Senecio pulcher, Pyrethrum uliginosum, Helianthus multiflorus fl.-pl., and Veronica Andersoni. Certain Roses would also probably succeed, such as Charles Lawson, Chenedole, Madame Plantier, and others of the Hybrid China and Bourbon race; also the hardier kinds of Noisettes, as well as the Ayrshire, Boursault, and evergreen varieties.]

Pinus insignis.—In answer to "P.'s" enquiry (p. 366), allow me to say that I have found no Pinus nearly so rapid in its growth as P insignis, though I am unable to quote precisely as to its measuments. "P." need not scruple to plant Pinus insignis in the open ground in the south of Ireland. I have about 1000 of this Pinus of all ages since the date of its introduction, many in the most exposed borders of plantations near the sea, in Mount's Bay, Cornwall. Most of them are seedlings from my own older trees. This species enjoys the moisture of our climate, coming, as it does, from the sea coast of California. I consider it one of the best of nurses, giving better shelter, and growing much faster, than either P. austriaca or the Pinaster. The severe Atlantic gale of October, 1877, slightly browned the most exposed trees here, but they have already recovered. P. insignis, however, suffers severely from snow in a cold winter, losing entire limbs, and often dying from its effects. As to the timber, home-grown samples are not yet old enough to test; but I have planked and used wood of thirty years' growth both for furniture and for wheelbarrows, &c., and find it easily worked, light in weight, tough, and strong, though liable, as might be expected from immature timber, to be wormed. If planted closely, it may be made to produce clean, straight timber.—J. J. R., *Penrose.*

Blanching Endive.—I have some very fine plants of Endive sufficiently large to tie up and blanch for use, but I find if tied up with the least moisture on any part of the leaves they turn rotten and are spoilt for use. I have heard of their being blanched by laying a tile or slate over them, but presume this must be done when they are thoroughly dry. Can you give me directions how to act?—J. Y. [Many ways and means of blanching are resorted to by cultivators, the most common being that of arranging the leaves in the same way as those of Lettuces; if tied in two places instead of one, as is often the case—*i.e.*, one in the middle and one at the top—the blanching will be more complete than it otherwise would be. Some invert flower pots or Seakale pans over the plants, which is, perhaps, the least troublesome method of any. Others cover the heads entirely with dry soil. Straw hurdles, too, put over the plants in such a manner as to exclude light from them, is a very easy and effectual way of blanching, and by continually moving these onward as the heads are cut, a successional supply of well-blanched Endive may be secured. No more than is likely to be used should be blanched at a time, inasmuch as after a certain period flavour and crispness gradually decline. Flat tiles or slates are sometimes used for blanching, first pressing down the hearts of the plants with the hand, and then applying the tile or slate, afterwards covering the whole with earth or dry straw. Whatever process of blanching may be preferred, it should at all times be done when the foliage is dry, otherwise discoloured or rotten hearts will be the result. Taking all things into consideration, there is, perhaps, nothing better for blanching Endive than the common flower-pot, or seed-pans without holes in the bottom.]

Names of Fruits.—*Leigh Holme.*—1, Marie Louise Pear; 2, Pear unknown; 3, Calebasse; 2, Fearn's Pippin Apple; 3, Queening.

Names of Plants.—*J. A.*—Pyrethrum uliginosum. *Mrs. G. R.*—1, Canavalia, a large kind of Bean; 2, a Composite, which we do not recognise; 3, Convolvulus; 4, 5, 6, 9, varieties of Dwarf Beans; 7, 8, 9, ornamental Gourds. *F. W. G.*—Rivina humilis, Dendrobium palpebræ, Lastrea glabella. *Miss A. H.*—The blue flower is Agathea cœlestis variegata; the other Chrysanthemum fœniculaceum.

Laburnum in Flower.—On walking past Saltaire Park, near Shipley, on Saturday last, I noticed that almost every Laburnum was in full bloom, although devoid of leaves. The trees face the north, and are wholly unsheltered.—F. W. J.

Anemone japonica.—Noting the statement in The Garden (p. 345) respecting the flowering of the Rose-coloured Anemone japonica, I may mention that I have between forty and fifty blossoms on my plants at present, and plenty more are coming on.—Wm. Johnston, *Ballykilbeg, Co. Down.*

National Rose Society.—The date for this Society's exhibition at Manchester, is Saturday, July 12, not 14, as stated in The Garden (p. 367).

No 364.] SATURDAY, NOVEMBER 9, 1878. [Vol. XIV.]

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

LONDON MARKET GARDENING.

There are now in England over 161,228 acres of land devoted to orchards, and 33,677 acres to market gardens properly so called. In Middlesex alone there are 4606 acres under market crops, and 3004 acres under fruit trees. In Kent there are 11,589 acres of orchards, and 3466 acres of market gardens, and in Surrey 1669 acres of orchards, and 1654 acres of vegetable ground. In the more immediate neighbourhood of London market gardening is considerably on the decrease, owing to the land being required for building and other purposes. Moreover, land close to London has now become so valuable, that market gardeners are unable to pay the heavy rents required for it; and now when our means of transit are so perfect, goods can be sent to London from twenty miles, or even greater distances off, at very little expense. Hence it is that vegetable and fruit gardens are gradually getting further off every year. A market grower owning from 16 to 20 acres of land, occupied by fruit and vegetable crops within a few miles of London, informed me that he had been offered £5000 per acre for the whole of it on several occasions for building purposes. With florists' establishments the case is wholly different; they may be found by hundreds in the rear of suburban villas, many of them being confined to half-an-acre of ground, which is entirely covered with glass, and from some of these places the amount of plants, fruits, &c., that are sent to market is almost marvellous. The best cultivated market gardens round London are those in the Fulham Fields, the once famous Deptford grounds being now nearly over-run by the builder. From Chelsea to Kew Bridge, on the north bank of the Thames—indeed, almost the whole of the land between the river and the road leading from Hammersmith to Kew is occupied by garden crops. On the other side of the road just alluded to the garden lands extend from Hammersmith to Acton, and from thence between Gunnersbury and Brentford to Richmond, Twickenham, Hounslow, and Feltham. On the south side of the Thames, from Deptford to Woolwich, are vast tracts of land under vegetable crops. From Battersea to Putney are many scattered patches, and from Putney through Barnes to Mortlake are also large areas of market garden ground. In short, nearly the whole of the Thames valley is occupied by fruit trees and vegetable crops.

So much, indeed, has the demand for fruit, and vegetables, and the love for flowers increased in London during the last few years, that market gardening has now become one of the most important of industries; but, whilst thousands are engaged in its pursuit, and fruit, vegetable, and plant growing gardens are being increased in great numbers, the London markets have still to depend in a great measure on foreign produce for a good supply of fruits, early culinary, and salad vegetables. Even plants and cut flowers—large as are the numbers grown within twenty miles of London—are imported in great quantities from France, Holland, Belgium, and other parts of the Continent. This happens especially in early spring when choice flowers are in the greatest demand, and when such flowers as Lily of the Valley, Lilacs, and Roses can only be produced by English growers by the aid of rapid forcing, which is, on account of the high price of fuel, at all times near London an expensive operation. Foreign growers, on the other hand, can produce them early at little expense; and now that the means of transit are so great, cheap, and rapid, they have little difficulty in competing with English growers, both as regards price and quality of produce. That foreign produce of all kinds interferes seriously with the pecuniary interest of the English grower there can be little doubt, yet there are ample opportunities for men who are well acquainted with their business to start market gardening on a large scale and realise profitable returns. It is, however, a business which fluctuates greatly; and men who commence growing flowers, or fruits for market, and know little of the business at the commencement, unless possessed of a large capital, often fail before they get acquainted with the requirements of the market. The most successful men are generally those who, from long experience, know exactly at what time of the year the demand for each article grown will be the greatest, and when it is likely to yield the largest profits. Whenever a depression of trade occurs, and the demand for market garden produce of any kind is small, it is the beginners in the art who suffer as a rule, and not men who have become established in their business. This year (1878) hundreds of waggon-loads of excellent Cabbages have been sold for a sum little more than that which has to be paid for a load of manure, which market gardeners always contrive to take back with them from London. Broccoli also were so abundant as to be scarcely worth cartage, whilst other kinds of vegetables were only obtainable at high prices. This shows that a great point to be observed with all market gardeners is to avoid, as far as possible, a "glut" in the market. This is sometimes hardly possible, yet I think it might be prevented to some extent if cultivators were to grow such crops as have always paid them best, and which are known to succeed best in their locality, instead of growing on a large scale some kind of produce for which there happens to have been, for the moment, a large demand. Take the Tomato, for instance; when first it found favour with the English public there was a rage for it all at once. Large growers commenced its culture, and the consequence was that the price was so reduced by the quantity brought to market from English and foreign sources, as to make it a by no means profitable crop. Gardenia flowers and Tea Roses, again, were at one time a source of profit to the grower, and the demand being great a few growers produced them in such quantities, that the price obtained for them has become but little remunerative to any one, except those who happen to have a good many blooms just before the "glut" comes. One thing we may remark, that however plentiful any kind of produce may be in the market, the general public derive but comparatively little benefit therefrom, except in the case of common fruits, or vegetables, or flowers, for the retail prices are usually kept up by the middlemen, who require large profits on all their goods; and until there is more direct communication between the grower and consumer, none but those in the most affluent circumstances can hope to obtain an abundance of first-rate English-grown produce, such as Grapes, Peaches, early vegetables, &c. It is a strange fact that people who live near the market gardens where the produce is grown have to pay even higher prices for it than people near the market, which is of course caused by all goods having to be first sent to market.

The rent of garden ground round London varies very much; that nearest to town of course is the highest rented, but, as a rule, land containing no buildings or fruit trees is let at from £6 to £10 per acre; and where good established fruit trees exist, £15, £18, and as much as £20 per acre is often paid for it; and market gardeners inform me that such land is by far the most profitable, inasmuch as should a fair crop of fruit be obtained, it goes far not only to pay the rent, but also to defray labour and other expenses, and the vegetable or other under-crops yield, as a rule, good profits.

To give an estimate of the extent of florists' establishments near London would be almost impossible, so plentiful are they. Barnet, Potter's Bar, Finchley, Enfield, Tottenham, Acton, Ealing, Feltham, Isleworth, Richmond, and many other places abound with plant-producing gardens of every description and size. Although many of our largest fruit growers and florists send large quantities of their produce to Manchester, Liverpool, and other towns, yet the greater portion is grown expressly for Covent Garden market. The hours during which the flower market is open are from 4 to 9 in the morning during the summer, and from 5 to 9 in winter; few persons, therefore, who have not some special interest in flowers and plants are there so early; nevertheless a large amount of business is transacted. The building, which has been erected since 1870, is 200 ft. one way and 76 ft. the other; the central section is 70 ft. high to the ridge, and is efficiently lighted by clerestory windows and a lantern-light, with ample provision for ventilation. The total number of stalls, which consist of two iron shelves or benches one above the other, with a few square yards of frontage, number about 270, each one being capable of holding a large quantity of fair sized market plants in 6-in. pots; the rent of each of these stalls is about £7 10s. per annum. At the entrance to the market, and within the fenced yard, standings are let to people who sell wild Ferns and similar plants.

Everybody in London is, of course, acquainted with the numerous small florists' establishments, with their half-a-dozen or so small houses, in which are grown bedding plants wherewith to deck the gardens of suburban villas, or a few florists' flowers with which to supply a casual customer, as such places usually occupy prominent positions in important thoroughfares where they can be readily seen by passers-by; but comparatively few unconnected with the trade are acquainted with the large plant and indoor fruit depots in which goods are manufactured wholly for Covent Garden and other London markets. Many of these are situated in positions so secluded, that people might easily pass them without observing even their existence. There are no elaborately painted sign-boards, nor direction posts to make known the name of the proprietor, and the character of his stock, for as a rule visitors to such places are a hindrance rather than a help. A very interesting sight in connection with the flower markets in the spring is the thousands of baskets and boxes filled with flower roots of all description, arranged on a sloping bank at the west end of the market. The first kinds of roots to appear are the Christmas Roses and the Winter Aconites; then come Snowdrops and Crocuses, which are succeeded by Daffodils, Lily of the Valley, Squills, various Irises, Tulips, double-flowered Daisies, Primroses, Polyanthuses, Sweet Williams, fine blood-red Wallflowers, double-flowered Scotch Daisies, sweet-scented Violets, fine Phloxes, Cloves, Hollyhocks, Rockets, Lavender, and hundreds of other plants. Virginian Creepers, Jessamines, Irish Ivies, Creeping Jenny, and Periwinkles also find a ready sale for covering balconies, bare walls, and window-sills of London dwellings. Most of these flower roots are brought in small tufts with their roots rudely tied in Moss, Fern, or Grass, and it is astonishing the quantities that are weekly disposed of both by people who stand in the market and by hawkers who take them round on their barrows. They range in price from 1s. 6d. to 3s. 6d. per dozen clumps, according to the variety. Such plants as Ivies are brought in pots and sold at prices varying from 1s. to 3s. each. These kinds of plants are grown in small, out-of-the-way gardens, as well as in large fields; they are generally grown very roughly, the aim being simply to sell them, without any attention being paid to their good or bad qualities. But very often amongst these roots exposed for sale in this rough way we may find some good old English flowers, that it would be difficult to obtain from any other source, or at least under the name they formerly bore, or that given to them by the market dealers. Roots of the red and white Daisy always command a ready sale, and for excellence of strain those found in the market are unsurpassed, the flowers being large and of a fine colour; they are grown on well manured land, and in spring three times a week are sent to market hundreds of dozens packed in shallow boxes, which are readily bought by retail dealers, who display them on their stalls outside the market for sale. Early in spring is also, perhaps, the most interesting time to see the bouquets in Covent Garden, for they are certainly much more beautiful then than at any other season of the year. They are then composed of Azaleas, Camellias, Roses, Gardenias, Violets, Spiræas, Lily of the Valley, white Lilacs, blue Scillas, Stephanotis, Hyacinth pips, Orchids, and other choice and effective flowers. Sometimes we find them composed of four or five blood-red Roses (General Jacqueminot), each of which are backed up with a few sprays of blue Forget-me-not, several golden yellow Roses (Isabella Sprunt) surrounded with light sprays of Lily of the Valley, and four or five white Roses (Niphetos), backed with plenty of their own foliage. The whole of these, when tastefully combined into a large bouquet, are edged with Maiden-hair Ferns, white Lilacs, and Rose leaves, an arrangement the effect of which is excellent. Button-hole bouquets consist of Gardenias backed with their own foliage. Rosebuds, too, are used in the same way; and when surrounded by fresh and fragrant leaves few button-hole bouquets are equal to them. Some very effective ones, however, may be seen composed of white Hyacinth flowers backed up by a few flowers of the blue Scilla sibirica or the scarlet Euphorbia jacquiniæflora; some are also made of double white Primulas, Neapolitan Violets, Spiræas, and Maiden-hair Ferns, with good effect. At whatever time, however, one may visit the Central Arcade of Covent Garden Market, we can always see something beautiful and learn something which we never knew before.

C. W. S.

Calanthes in Flower in Small Pans.—Some time ago we remarked in The Garden that the plan of cultivating Calanthes in small pans, a system practised in Messrs. Veitch's nursery, Chelsea, was likely to prove an excellent one. The plants being now in flower, we can speak of their superiority over those which have been grown in pots or allowed more root room. The pseudo-bulbs are very large, and on account of their confined roots and their having been suspended close to the glass, they have become well matured, and a fine mass of bloom is the result. The pans in which the plants are grown are about 5 in. in diameter and not more than 1½ in. deep, and many of them are furnished with flower-spikes 3 ft. long and as thick as one's thumb at the base. The individual blossoms, too, appear to be larger and of a much better colour than those produced on plants which have had more root room allowed them.

NOTES OF THE WEEK.

The Violet-scented Crowfoot (Ranunculus bullatus).—This is one of the very few sweet-scented, winter-flowering plants which we possess. It is now beginning to flower with me, and will continue to produce a succession of blossoms all through the winter. Its flowers are not showy, being about the size and colour of those of the ordinary Buttercup, but they are much more double, and they possess a strong perfume like that of Violets, on account of which they are very desirable. They are borne on single stalks from 6 in. to 9 in. high, and about half-a-dozen rise from each tuft of broad hairy leaves which lie flat on the soil. It thrives vigorously and flowers profusely in a damp and partially-shaded situation. It is very useful for cutting for indoor decoration, as the flowers last long in good condition. It is a native of the Mediterranean region generally, and is the same kind as was imported from Algiers, and sold last year in large quantities at Stevens' Sale Rooms. —W.

Lasiandra macrantha floribunda.—Well-flowered plants of this Melastomad have a striking effect in a greenhouse in Messrs. Veitch's nursery, Chelsea. The plants of the variety alluded to are dwarf, and yield a large quantity of brilliant violet-purple blossoms, measuring 4 in. across, a result entirely different from that produced by the type, which grows lanky and flowers sparingly. The plants are associated with Begonias, Statices, Rhododendron Princess of Wales (still one of the best and freest-flowering of greenhouse Rhododendrons), fine-foliaged plants, Heaths, &c., amongst which they form the most attractive objects.

Oncidium Forbesi.—Amongst Oncidiums there are, perhaps, none which surpasses this in beauty and usefulness. It will grow and flower freely under cool treatment, and its blossoms furnish a colour which is not frequently found in flowers at this season. In Messrs. Veitch's nursery we noticed the other day plants of it bearing strong, gracefully-arched, branching spikes of rich drab or chocolate-coloured, gold-laced blossoms, which formed a striking contrast to the luxuriant masses of O. varicosum and O. Rogersi, which were in flower in the same house. Near these, in another house, were also a number of plants of Odontoglossum Roezli in bloom, likewise several beautiful hybrid Cattleyas and Indian Crocuses.

Caladium argyrites.—Few ornamental-leaved stove plants surpass in usefulness this pretty little Caladium. It can be grown on and be had in perfection even in the dullest months of winter, when its lively green and white leaves show themselves off conspicuously either on brackets or placed in small vases in the conservatory or dwelling house. Small pots or pans are best adapted for this Caladium, as under such conditions the plants may be used for a variety of purposes. We have often grown it in flat boxes and lifted them for placing in vases among cut flowers for decoration at Christmas. In this way the leaves keep fresh for a week or two, and the plants receive little or no injury by being thus transplanted. Quantities of plants of it are grown in small pots in Messrs. Hooper & Co.'s nursery, where they form an effective fringe to shelves and stages furnished with Palms and other green-leaved plants.

Anthurium Scherzerianum in Winter.—A specimen of this plant in Mr. Wills' nursery, Anerley, is at present furnished with a large number of brilliant flower spathes, which appear to be of a much darker and richer colour than any we have before seen. This may possibly be caused by their being produced at this unusual time of the year, a circumstance which greatly increases the value of the plant. The white-flowered form is also in bloom, but as yet it cannot be considered a counterpart of the red kind; by continually raising seedlings, however, and by good cultivation, it may yet be possible to obtain a white-flowered form equal in every way to the crimson kind.

Chrysanthemums in the Temple Gardens.—These are just now at their best. They are arranged in what may be termed a long temporary house, consisting of glass and canvas. The taller plants are grown in pots and arranged to form a bank of judiciously-mixed colours, the pots and bare stems being hidden by a close, low hedge of Pompones planted in the front of the border. The Japanese varieties are this year exhibited here in considerable numbers, and add much to the attractiveness of the collection. Their flowers are much more graceful and less formal than globular or incurved flowers, and ought to be seen at exhibitions as well as elsewhere more frequently than at present. Among the most attractive Japanese kinds we may mention Elaine, snowy-white, very large and handsome; Cry-Kang, pink and white; Gloire de Toulouse, petals long and narrow, and rich magenta in colour splashed with white; Fair Maid of Guernsey, white; Abd-el-Kader, vivid blood-red and of medium size; Red Dragon, flame coloured; James Salter, pink, with broad petals overlapping each other so as to form a ball. Among incurved kinds the most attractive are Dr. Sharp, magenta, sweet scented; Peter the Great, lemon coloured; White Globe; Triomphe du Nord, reddish-bronze; Sparkler, well named on account of its red flowers, the petals of which are edged with brilliant golden-bronze; Vesta, white; Mrs. George Rundle, white; and Mrs. Dixon, bright lemon. The flowers throughout are very large and fine, and forcibly show what grand displays Chrysanthemums may be induced to make during the dullest months of the year even in the centre of London.

—— The Chrysanthemums at the Crystal Palace are also very fine this year, and very early. Some of the plants measure 7 ft. and 8 ft. in height, and, being arranged in a half circle near the Crystal Fountain, amongst Tree Ferns and statues, they make a grand display.

Two Rare Phalænopsids.—In Messrs. Veitch's nursery, Chelsea, there are now flowering P. violacea and P. Esmeralda, two rare kinds, which, though chiefly of botanical interest, are well worth adding for the sake of variety to any good collection of Orchids.

November Flowers Out of Doors.—Amongst these may be named the delicately-coloured Iris alata, blooms of which have been shown us by Mr. Barr. It is the first to flower in the open ground, and when potted early in the season it blooms under glass in October. It is a charming species of a soft purplish-blue colour, both standards and falls.

Dracænas and Crotons at Anerley.—Fine plants of these intermixed judiciously in a large house in the Anerley Nurseries have at this season a striking effect. They consist of well-developed plants remarkable for the rich and varied colours of their leaves, which are brought out in perfection in the light, airy structure in which they are grown. This collection serves to show that fine-foliaged, as well as flowering, plants are always seen to better advantage when arranged in groups and masses than in any other way.

White-flowered Rue (Ruta albiflora).—This graceful autumn-flowering plant may probably be known by some under its almost unpronounceable, yet correct, generic name of Bœnninghausenia. It grows about 2 ft. high, and in foliage somewhat resembles the common Rue, but the leaves are more finely divided and more glaucous. The small, bell-shaped, and pure white blossoms are borne profusely in large, terminal, lax panicles, which droop very gracefully and last until sharp frosts curtail their beauty. In some localities it is quite hardy, but, generally speaking, it should have some slight protection in severe weather, if not planted against a wall. For conservatory decoration it forms a very attractive feature when arranged with bright flowering plants, and for that purpose it well deserves attention. It may be propagated freely by means of cuttings put in in spring, and when grown on with liberal treatment it makes fine flowering specimens for early winter decoration. It is a native of Nepaul, and has been in cultivation for many years, but now it is not so frequently met with in gardens as it deserves to be. —W.

Talisia megaphylla.—The stove shrub, the approaching blooming of which, under the name of Brownea erecta var. princeps, in one of the houses at Lakelands, near Cork, was announced a few weeks ago in The Garden, turns out, now that the blooms are fully expanded, not to be a Brownea at all, but Talisia megaphylla, a native of British Guiana, where its native name is Toulichi, under which, perchance, some readers of The Garden who have seen it in its native country may be glad to recognise it and learn its true botanical name. It is a member of the family of Sapindaceæ, or Soapworts. The flower-scape is more interesting from its curiosity than from its intrinsic beauty, the centre spike being upwards of 2 ft. in height, and being clothed with branching, candelabra-shaped lateral flower-spikes for about half its height. The individual flower-pips are small and inconspicuous, of a dull woolly, whiteish colour, and somewhat resembling in form and appearance those of the Portugal Laurel. The plant was identified and named after a careful comparison of the specimens sent by Mr. Crawford to the Herbarium at the Royal Gardens, Kew.—W. E. G.

Late-flowering Marechal Niel Rose.—Thinking it may interest some of your readers, I write to say that I have this morning (November 5) cut a magnificent bloom of Maréchal Niel from a standard which has had no artificial protection. The size, colour, and form of the bloom were perfect. Such a Rose so late as November in East Yorkshire is, I think, a rarity.—J. Holmes, *Beverley, East Yorks.*

Mr. Linden has opened an establishment in the Rue de la Paix, Paris, for the sale of the horticultural products of his well-known Ghent establishment.

NOTES FROM KEW.

Hardy Herbaceous Plants.—Nearly all the hardy herbaceous plants whose blossoms have so far withstood the damp and cold could easily be counted on the fingers. Even the Composites, naturally amongst the latest of autumn flowers, now furnish but a few solitary kinds. All the Asters, with the exception of A. tenuifolius and A. miser var. pendulus, noted in last week's Garden, are quite gone, and the only plants belonging to that natural order which enliven the (at present) dreary herbaceous ground at Kew are Neja falcata and N. gracilis, which have before been mentioned in "Notes from Kew," and Chrysopsis pilosa, a North American perennial, growing about 2 ft. high and bearing golden-yellow flower heads. Nerine flexuosa, a pleasing Amaryllid of easy culture, from the Cape of Good Hope, has already been noted as a desirable autumn-flowering greenhouse plant. It is, however, doing well in an open border by the side of a wall, and its umbels of charming rose-tinted flowers look doubly pretty in their solitude. A few specimens of Ipomopsis Beyrichi, about 18 in. high, have their stems clothed with finely-divided leaves and crowned with pretty flowers which are tubular in shape, the flat, star-like limb being buff, splashed with red.

Greenhouse Plants.—Viburnum odoratissimum, a Japanese species, is now gay with its compound umbels of bright coral-red fruits; it is a shrub of neat habit, and is admirably adapted for the decoration of the cool conservatory during the late autumn and winter months; the pretty fruits look well by gaslight, and the plant would, no doubt, if specially grown for the purpose, make a handsome object for table decoration. Gamolepis euriopoides, a shrubby Composite from the Cape of Good Hope, is a neat growing plant, with bright golden-yellow flower heads and cut foliage much resembling that of many Grevilleas, such as G. Thelemonniana. The delicious fragrance of the small, yellowish-white blossoms of the Chinese Osmanthus fragrans renders it worthy of cultivation in any collection of choice plants; the flowers are said to be used by the Chinese in scenting high-class Teas. Though known in English gardens for upwards of a century, it is not nearly so frequently seen as its merits deserve. Acradenia Franklini, a Tasmanian shrub named after Lady Franklin, belongs to the Rue family, and has opposite, stalked, rigid, fragrant leaves formed of three leaflets, and star-like, white flowers; it forms a dense bush when planted out, as in the Winter Garden at Kew. Acacia platyptera is one of the earliest-blooming and, at the same time, one of the most distinct of all the Acacias; it flowers most freely in a young state, and specimens in small pots are now gay with thousands of orange-yellow, globular flower heads.

Stove Plants.—Dombeya Burgessiæ, a very free-flowering shrub or small tree from the Cape of Good Hope, has large, fragrant blossoms, white, veined with red. In general habit it much resembles its relation, Sparmannia africana, and is of equally easy cultivation. At present this is one of the principal ornaments in the great Palm stove, but it would probably do well as a greenhouse plant. Billbergia macrocalyx, a beautiful and interesting Bromeliad, is more remarkable for the rich scarlet colouring of the large bracts than for that of the blossoms; the leaves are about 1½ ft. long, and are dark green, with pale spots scattered here and there. In a wild state it is found on the Mossy branches of trees in Bahia. Begonia falcifolia, a fine sort introduced from Peru by Messrs. Veitch, through their collector, Mr. Pearce, is a distinct and desirable plant, not only on account of its beauty, but by reason of its prolonged flowering season; it grows about 2 ft. high and the stems are more or less branched. The somewhat sickle-shaped leaves are deep green, often bronzed above (spotted with white when young), and deep red-purple beneath; the blossoms are a pleasing rosy-pink colour.—†.

Saving Old Bedding Pelargoniums.—All flower gardens will soon be cleared of their summer occupants, but it is seldom that anyone saves the old Pelargoniums for another year; new sorts and variegated kinds are, however, often worth preserving. We have tried various ways of doing this, one of the best of which is lifting all the plants we are going to save first, cutting them close down to the bottom buds, and then packing them as closely as they will stand in cutting-boxes with a little light soil over the roots. They are then put in a cool glasshouse or room, and by spring every root will be in a growing state, throwing out numbers of shoots and making excellent dwarf plants for planting again the following season.—Cambrian.

Umbilicus Sempervivum.—There is an immense quantity of this bright-flowered and most interesting Lebanon plant in the Belvedere Gardens at Vienna, some of them being in showy bloom recently in the open air. It seems quite hardy, and will prove a welcome addition to the rock garden. The flowers are bright red.—V.

THE FLOWER GARDEN.

PLANTING OUT BOUVARDIAS.

Many kinds of half-hardy soft-wooded plants, the natural time of flowering of which is during the autumn or winter months, are found to succeed best when planted out in the open air in summer in suitable soil and carefully lifted and potted when about to commence flowering late in autumn. Such is the case with Bouvardias. Cuttings of them should be taken off plants growing in the open air about the middle of August, and inserted in well-drained pots filled with a compost formed of finely sifted leaf soil and silver sand in about equal parts. When inserted they should be placed upon cinder ashes in a close frame, where they will soon strike root without the aid of bottom heat. When fairly rooted they should be potted singly into pots some 3 in. in diameter, and placed upon a shelf near the glass in a warm greenhouse or similar structure. About the end of March or early in April they should be shifted into pots some 5 in. in diameter. The soil used may consist of about two parts turfy loam and one part leaf mould with possibly a portion of sand. Peat may be used in place of the leaf mould if desired, but it is not absolutely necessary, as the plants are found to do equally well without it. As the season advances the plants may be placed in cold pits or frames and gradually inured to the open air. They may be planted out about the first week in June.

It is essential that the pots should be well filled with roots when the planting out takes place, and the ball of soil should not be broken with the view of setting the roots at liberty. The roots will be found to strike into the fresh soil readily enough, and keeping the balls entire greatly facilitates the process of lifting and repotting, so as to cause as little check to the plants as possible. If the soil in which they are intended to be planted be of a heavy character, it should be prepared for the purpose by the introduction of a portion of light turfy soil and leaf mould; but in ordinary rich light garden mould they are found to succeed admirably.

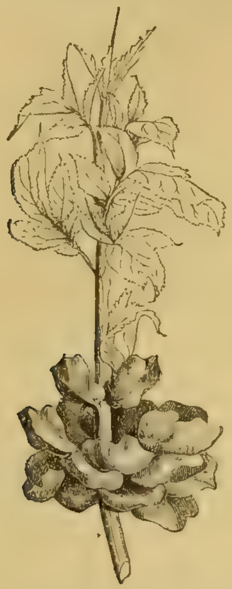
When the plants have become fairly established in the soil and are growing freely the stronger shoots should be stopped, and a few stakes may be found necessary in order to induce them to form compact and symmetrical bushes. Towards the end of September most of them will be showing trusses of bloom buds, and before these become further developed the plants should be carefully taken up and potted, using pots of such a size as the plants may require, but avoiding at the same time anything like overpotting. Pots some 8 in. in diameter will generally be found to be the most suitable size, and the soil used may be the same as that which has been already recommended. The plants should now be neatly staked, and should be placed for a time on the north side of a wall, where they should be syringed frequently in order to prevent them from flagging, taking care at the same time to avoid making the soil in which they are potted too wet. In a few days they will generally be found to have recovered from the check caused by removal; and by the 1st of October, not later, they should be placed in the greenhouse, where they will continue to bloom throughout the greater part of the winter, especially if that structure, after the third week in October, be kept somewhat close and warm, and the plants allowed to occupy a position pretty close to the glass. As soon as they have fairly ceased flowering water should be to some extent withheld, and the plants when at rest may be placed in any situation where the temperature does not fall much under 40°. When they again begin to show signs of growing they should be cut well in, and placed in a favourable position as regards light and warmth; and when the young shoots have attained 1 in. or more in length, the old soil should be shaken from the plants, or the ball of earth should be very considerably reduced and the roots cut in, so that the plants may be accommodated in pots of a smaller size. In June they should be again planted out, when they will be found to make better specimens for potting in the autumn than younger plants.

There are now several fine species and varieties amongst Bouvardias. One of the very best is B. Humboldti corymbiflora, which comes into flower earlier than the others; and the blooms, which are produced in bunches of twelve or more together, are of larger size, rivalling in purity of colour, as well as in delicacy of perfume, those of the well-known Stephanotis. B. alba odorata, also white, has flowers of great substance and highly perfumed. They are shorter in the tube than those of B. Humboldti corymbiflora, and last long in good condition. Among many other free-growing white-flowered kinds may be mentioned Bridal Wreath, Davisoni, jasminoides, longiflora, umbellata alba, and Vreelandi, the last named being a very fine free-flowering kind. The flower tubes of Maiden's Blush are of a delicate pink shade; and those of multiflora, violet tipped with white. B. flava is a very distinct variety with yellow flowers; and Hogarth, leiantha, splendens, and Van Houttei are all fine free-flowering scarlet sorts.

Culford, Bury St. Edmunds. P. GRIEVE.

A PROLIFEROUS ROSE.

THE accompanying figure represents a very complete instance of what is termed median prolification, a kind of malformation in which the centre of the flower is occupied by a branch bearing normal leaves. Those parts of the flower present are more or less metamorphosed and scattered on the elongated floral axis, whilst stamens and pistils are wholly wanting. I have so recently written something respecting the significance of the singular reversions frequently met with in the organs of plants, that it seems superfluous to enlarge upon the theme again.



W. B. HEMSLEY.

AUTUMN PLANTING GLADIOLI.

SINCE the insertion of my remarks on these beautiful autumn flowers several notices have appeared on the subject of their culture, and more especially with reference to the question of leaving them in the ground during the winter, about which considerable difference of opinion exists. As I have been for perhaps as long a time growing the Gladiolus as any other amateur cultivator in a small way, some particulars on the subject of its cultivation may not be out of place; the opportunity of seeing Gladioli grown in other places, both in England and France, having been afforded me, my experience is somewhat wider than my own small culture might seem to warrant. That with them, as with many of the Lily tribe, a difficulty in their cultivation has been felt by all, except in a few favoured localities, ever since the great improvement of the varieties took place. There was no difficulty in growing psittacinus, gandavensis, oppositifolius, or even brenchleyensis, but as soon as the blood (so to speak) became intermixed and increase in size, texture, and beauty of colouring took place, then delicacy of constitution set in, and nearly all Gladiolus growers have more or less complained of the difficulty of keeping new and valuable varieties. There have been two theories as to the loss of bulbs, one which attributes it to a disease analogous to the Potato disease and to that which affects sometimes the Crocus, and another which says it is owing to exhaustion. Now, although my own opinion as to which is the correct view of these two is very strong, I do not intend to enter upon it, but simply to note the fact, and to see how it has influenced their culture.

We are all aware that certain soils are congenial to some plants, and destructive to others; the whole family of Rhododendrons and their allies hate chalk, and only dwindle away and die on it, while the Fig and Apricot rejoice greatly on it; a heavy soil is death to all the Lily tribe, and therefore the Gladiolus will not thrive on it. He would be a wizard, indeed, who could get his Lilies to thrive on the London clay; and, therefore, where there is a heavy retentive soil, it cannot be expected that the Gladiolus can be grown with any degree of comfort. A fresh loam, that which is ordinarily called good market garden soil, suits them well; but even where the soil is suitable considerable care is required to obtain success. The plan adopted in France, and almost universally in England, is to plant in the spring (March or April), and to lift the bulbs in November, drying them carefully and keeping them so until planting time. The commoner and hardier sorts have been sometimes left in the ground, but growers have been chary in so treating the choicer varieties. During the last two or three years I have begun to question the wisdom of the plan, and for the following reason: I had about five years ago planted a considerable quantity of spawn in a portion of my garden, now occupied with Roses; in taking up the spawn in the autumn it would appear that some of the smaller ones had been overlooked and left in the ground, for each year bulbs have made their appearance; they have flowered well, and when lifted have been large and healthy; and, as since the time I alluded to, we have had winters of varying character—wet and severe—and the bulbs had evidently not suffered, I was led to ask myself whether it might not be, that, although in some cases apparently the bulbs were not injured by being lifted and kept dry, yet that the loss which I so often had to lament might, perhaps, be avoided if I left them in the ground. The result was, as I have already stated, that there were no losses amongst the bulbs, and that the blooms were some of the finest that I have ever had of the varieties so treated.

In adopting this plan somewhat more extensively this autumn I shall not be deterred by the fear of frost, for I do not think that the Gladiolus, when planted deep, is likely to be injured by it, except in very severe winters; and should such a winter be before us, it will be easy for those who cultivate on a small scale to put some covering on the beds, such as Brake or long litter, removing it when all fear of frost is gone. I did not find that the bulbs left in the ground were one bit earlier in coming up than those planted alongside of them, and they came into flower about the same time. The prevalence of wet is, I think, more to be feared than frost, while wireworm may also in some grounds be troublesome. The depth at which I usually plant is 6 in., but for autumn planting I should be inclined to go deeper still, so as to secure the corms from frost.

Another question connected with this is, Are not English-raised varieties more likely to have vigorous constitutions than those which are raised abroad under more favourable circumstances, but which when coming to our colder and wetter climate suffer? Everything would seem to justify such a conclusion. One great merit attributed, and with justice, to our English-raised Roses is, that we can secure that vigour of constitution without which a Rose, however beautiful, is comparatively worthless; and Mr. Kelway tells us that he knows little, if anything, of losses in his large experience of the Gladiolus, so that a good deal may be urged on behalf of this. The vigour of those exhibited by him cannot be questioned. Whichever plan may be adopted, that of planting them now or in spring, the beds should be prepared now. My own plan is to dig in a quantity of well-decomposed cow manure, and then to turn it up roughly, to remain so during the winter. I prefer cow manure as being less hot than horse manure, and also less likely to generate fungi. When planting I generally put a little sharp sand round each bulb, and have sometimes used charcoal, although I think this is unnecessary. It was, many years ago, supposed that manure was injurious to them, but it is not, unless it be fresh, in which state no bulbs or corms seem to like it. When the plants have attained the height of 8 in. or 9 in., I generally top-dress with manure, so as to give greater vigour to the plants and keep the ground cool; the rains wash down the salts contained in the manure, while it keeps the surface from drying up by exposure either to sun or drying winds. Mr. Kelway uses a very large quantity of manure in his grounds, and with what success we all know. If the season be dry, the beds must be watered, a thorough good drenching being given to them, so as to wet the soil well.

I have been anxious to revert to this subject of culture because I should like some of those who grow the Gladiolus to give the autumn planting a fair trial and to report the result; it would be such an immense saving of trouble, that it would be hailed as a capital innovation. I shall give it a good trial myself this autumn, and hope to record the results in The Garden. The season has been a favourable one for the ripening off and storing of the bulbs, so that we may hope to hear that they have been lifted well. Delta.

ARUM LILIES (CALLAS) IN TRENCHES.

These plants are grown largely for market, and they are also used in large quantities for decoration of all descriptions. They succeed well along with scarlet Pelargoniums, the bright glossy leaves and snow-white flowers of the Calla contrasting effectively with the scarlet blossoms of the Pelargoniums, or with any red Chrysanthemum, such as Mr. Gladstone or Julia Lagravère. Quantities of the Calla should be grown in large gardens, to be used for filling up vacancies between tall-growing Chrysanthemums or other plants, positions in which they impart a lively appearance to the whole surroundings. I grow a great many Callas for winter flowering. Before I adopted the plan of growing them in trenches our stock was but limited, but they are so readily increased on the planting-out system, that a small stock may soon be worked into a large one. The planting out in the north of England should be done not later than the end of May if very large plants are required. Trenches should be taken out in a moist situation about 1½ ft. wide and 1 ft. deep, and in the bottom of each should be put a thick layer of well rotted manure, to which should be added a second layer of leaf mould, the whole being pressed firmly down with a rake. The plants should then be turned out of their pots and the balls of soil thoroughly shaken from them, in order to disentangle their roots. We then arrange them according to their different sizes. Their roots are spread out on the bottom of the trench, after which a little leaf soil is scattered over them and worked in amongst the roots. The trenches are then filled in with the ordinary soil to within 2 in. or so of the surface; thus the roots can at all times be abundantly supplied with water. A distance of 1½ ft. asunder will be wide enough apart for large plants, and 1 ft. for smaller ones. It is a mistake to suppose that these plants continue to grow all the year round; their leaves, at least, die gradually down in summer, but the roots are doubtless growing all this time, providing themselves with new fibres, and forming and developing young offsets or bulbs, which swell with great rapidity when the season of growth begins.

If we take, for example, three different sizes of plants and plant them out under exactly the same conditions, it will be found that the strongest offshoots of this year's growth will produce the largest stems, and also the largest flowers, at the end of the second year, of course always assuming that no other growths are encouraged to form themselves round the principal stem during the growing season in the course of the second year, and that the plants are encouraged before and after being planted out. The vigour of old plants is not so easily concentrated in one stem on account of their fertility in forming offshoots, and for this reason they are better adapted for show plants, or, as before suggested, they make excellent material for forming a groundwork, so to speak, for better plants in a show house or conservatory, to say nothing of their utility in cases of furnishing, a purpose for which they are not easily surpassed. After being planted out, little attention will be necessary beyond that of giving a watering in case the soil should become dry about the roots, which is seldom the case where the soil and trenches have been properly prepared. Our plants are now being lifted, and the opportunity is a favourable one for selecting a quantity of young plants for growing on as single-stemmed specimens next year. An opening is taken out in front and on either side of the plant with a fork, which is then inserted between the plant to be moved and the next plant, and the roots are lifted without the slightest injury. The young plants required for next year are then separated from the parent, and all are potted and taken to a cold frame, which is kept closed and moist for a few days till root action has again commenced. The circumscribed space allotted to the roots and the nature of the soil used induce them to make a thicket of roots, so that it is impossible for them to receive any check in lifting. I have measured four plants grown with single stems, and I found the circumference of each stem to be 9 in., a result which, when it is remembered is attained without much labour or inconvenience, cannot be considered otherwise than satisfactory. W. Hinds.

Otterspool.

CARNATIONS AND PICOTEES.

Persons intending to purchase a selection of Carnations and Picotees or similar plants for which there is a large demand, should now do so without delay, as where there is convenience to keep them over the winter this is a good time to get them. If there be no cold frame or similar structure to keep the plants from wet and frost, it is, however, better not to purchase until the time for planting out in March has arrived. Growers are now removing the layers from the parent plants, and it is much better to send them out now for two reasons; first, they do not receive any check to their growth, even if sent long distances, and secondly, they may be packed in very much smaller compass; a hundred pairs can be packed in a very small box weighing a few pounds. In spring they must be sent long distances in pots, when a hundred pairs would weigh with the packing nearly a hundredweight. This being the time to pot the plants, a few remarks on their culture may be useful. 3-in pots are the best adapted for them. I pot one large plant or two small ones in each; rich turfy loam with a fourth part of leaf mould and as much sand well mixed together is an excellent compost for them. The pots should be placed in frames, plunged in some light Cocoa-nut fibre refuse, and the lights should be kept rather close at first. During the winter the attention they require is to keep the surface of the pots free from green mould or Moss, and all decaying leaves must be picked from the plants; decayed portions of leaves can be cut off with a pair of scissors. The frames must also be carefully attended to during winter, and abundant supplies of fresh air must be admitted; indeed, a constant circulation may be kept up at all times except when the air is heavily charged with moisture. During winter, damp must be carefully excluded from the frames if possible; it is the worst enemy of the Carnation. Clear, frosty weather suits the plants best; the mould in the pots may be frozen and the effect of it not be felt by the plants. It is rather singular that the southern growers are afraid to plant out in the autumn, in case they should lose their valuable plants, and yet as far north as Newcastle-upon-Tyne they plant out in November or early in December, and from these plants produce very large flowers, the plants making most vigorous growth. They trench the ground well, working some rotten stable manure into the soil. Pig manure must not be used, as it produces canker; the sweepings from a cattle market, laid up for a year before using it, is an excellent manure. The plants may be put out 18 in. apart, and it is very desirable to place a few handfuls of rotten, turfy maiden loam round the roots of each plant, but, as turfy loam is seldom free from wireworm, it must be carefully looked over for that pest. It is a good plan to surface-dress the ground between the plants with rotten manure from an old Mushroom-bed or a spent hotbed. This is excellent to steady the plants, although, as a further precaution, especially in exposed positions, a neat stick should be placed to each plant. The plants are also liable to be thrown out of the ground during alternate frosts and thaws in winter, but, to a large extent, the mulching prevents this. No other attention will be necessary until the plants begin to "spindle," that is, to run up to flower, when a neat stick about 2 ft. out of the ground should be placed to each plant. During the season of growth the plants must be watered whenever it is necessary, and a good soaking must be given, not watering again until it is actually necessary. If we would take as much pains with these fine hardy flowers when they are planted out in beds as our Newcastle and other northern growers do, perhaps we would also manage them well. Certain it is that they are well worth a little extra trouble, and would form a delightful feature in any garden. When I was an under gardener in Scotland I had to attend to two beds of Carnations in a geometrically laid-out flower garden; each bed would be about 20 ft. long, and as far as I can recollect we scarcely lost a plant during winter. It was necessary to stir the surface of the beds occasionally. The following is a selection of the best florist Carnations for culture in beds in the north; the Picotees are more hardy, and nearly all the varieties may be planted out: Scarlet Bizarres—Admiral Curzon, Lord Napier, Lord Rancliffe, John Burnett, Mercury; Crimson Bizarres—Black Diamond, Rifleman, Isaac Wilkinson, William Murray, John Harland, Albion's Pride; Pink and Purple Bizarres—Sarah Payne, Satisfaction; Purple Flakes—Dr. Foster, Lord Derby, Earl of Stamford, James Douglas; Scarlet Flakes—Mr. Battersby, Sportsman, James Cheetham, Superb, William Harland, and all the Rose Flakes. Those who intend to cultivate their plants in pots must get all preparations completed in good time. It is a good plan to have the manure ready at least six months previously. I use manure from the stables from which most of the litter has been shaken out. It must be laid up in a heap to ferment, and should be turned over frequently to prevent over-heating. Manure prepared in this way is most useful in the potting shed. One barrow-load of it to one of leaf mould and four of turfy loam is the compost I use for Carnations in pots, and it is as well to mix it up at least two months or more before using it. The turfy loam should be pulled to pieces by the hands, a plan preferable to chopping it up, and carefully examine every particle of it for wireworms. Potting is performed about the end of February or early in March, and if the plants can be placed in cold frames for a month before turning them out in the open ground so much the better. Many growers place the plants out-of-doors as they are potted, but if a downpour of cold rain takes place immediately, the plants are very likely to be much injured by it. The plants ought also to be free from green fly before they are placed out-of-doors; this is a very troublesome pest, indeed, to Carnation growers, but I find if the plants are occasionally fumigated with Tobacco smoke during the winter that it can be destroyed. Fumigation is more cleanly and, perhaps, more effectual than dipping the plants in any mixture strong enough to kill them. It is very pleasant work for the ardent cultivator to attend to the plants when they are spindling for bloom, tying the stems to the sticks, and watching the expanding buds. Nearly all the large full flowers have a tendency to split their pods, and the splitting begins sometimes as soon as the colour of the flowers can be discerned. This must be watched for, and the segments on the opposite side must be slit down a little, and the calyx should be tied round with a strip of matting. When the plants come into flower they should be removed to the greenhouse. A few dozen have quite a unique effect amongst other plants. The exhibitor will also place his plants under glass, but he will not arrange them amongst a miscellaneous collection of plants; they must all be placed together, the open flowers in a cool part of the house, and those that are not so far advanced in a part of it where they can get more sun. Many persons have not the convenience of a greenhouse wherein they can place their plants at blooming time. An excellent substitute may be found by utilising any spare lights that are not in use for other purposes; the lights may be fixed high enough to be 1 ft. high above the highest flowers by any plan that may be available at the time. I simply drive two rows of posts into the ground; one row is 6 in. higher than the other, and on the top of each row of posts I nail a slight rail. The rails serve to support the lights and to steady the posts, as they also are of light material. Some light shading nailed on the posts will protect the bloom from high winds. It will also be necessary to shade the glass lights, as Carnation and Picotee blooms speedily shrivel up if exposed to the sun. J. Douglas.

AMPELOPSIS VEITCHI & OTHER WALL PLANTS.

Nothing is more objectionable than buildings defaced by nail-holes, the result of tacking up climbing plants, unless it be their sprawling about in the wild, uncared-for condition which they too often assume. No wall that has any pretention to neatness and finish should have a plant trained to it without either a trellis or strained wires, unless it be such plants as Ampelopsis Veitchi and the different varieties of Ivy, that cling with such tenacity, as not to require any other means of support than that which Nature has given them. A very fine and pleasing effect may be made by using these two kinds of plants alone in alternate divisions of 5 ft. or so wide, according to the space to be covered; but when this is done, it should be with the Ivies of neat, close growth, such as Hedera elegantissima and H. aurea, which, if clipped every spring, make fresh, bright foliage that commands admiration. The contrast between these and the Ampelopsis is most striking, and particularly so during the autumn, after the latter becomes a rich claret colour, as it always does in a light, exposed situation. The only drawback which it has is its being deciduous, but by planting it, as above indicated, between ornamental Ivies, its foliage is not so much missed for the short time it is off as it otherwise would be. Those, therefore, who have walls they wish to cover with something really cheerful-looking, that will give them little, if any, further trouble, cannot do better than use these plants for the purpose; and, if the soil before putting them in is well broken up, and a little rotten manure added, they will not be long in running to the top, especially if assisted occasionally during the summer with soap-suds or other similar sewage, as their roots, being so close to the building, are not in a position to be benefited by any rain that may fall. On dwellings, most people have a desire for Roses, and charming wall plants they are, besides which it is the only situation in which some of the best of them can be grown successfully, owing to the shelter and protection they require. Take the Maréchal Niel, for instance, the young foliage of which gets pinched and cut about when grown exposed as standards or on trellises, but on walls facing south or south-west they escape and flower profusely. The grandest display of this fine Rose I ever saw was in a position of this kind; but, wherever planted, the thing is to encourage as much young wood of medium size as there is room to lay in, as it is from this that the whole of the flowers are produced. To spur this in or to prune as most other Roses are pruned, is to cut these away, as almost every bud, except those at the base, contains a bloom in embryo, and it is the same with most other climbing Roses, all of which flower with much greater freedom when treated in the above-named way. The best plan for training these is to drive in some studs with holes in the end, through which to run the wires for support, and then get a strain from one end that each may be made tight and fast. If these wires run along every second or third course they will be quite near enough together, and save the introduction of nails and shreds, besides giving greater security. For training Clematises, Honeysuckle, and other similar twining plants, wires strained vertically are best, as then they are in the right direction for the young shoots, which wend their way up them without any assistance. The great improvement that has been made in the first-named of late renders them very desirable as wall plants, a position in which they succeed admirably, and show off their magnificent flowers to great advantage. Jackmanni, and others of similar depth of colour, are most striking on pale walls, the light backing showing up in capital contrast with the blue flowers, and red brick does the same for such delicate shades as lanuginosa and others of that class. To grow these really well they require great depth of soil, and not only this, but plenty of rotten manure as well, and to be liberally assisted when growing and blooming with water or sewage, which greatly prolongs their beauty. The flowers of these being made on the young growth, the way to treat them is to cut off most of that made the previous year, leaving only a bud or two at the base, each of which will start, and again fill up the space made vacant. Some growers cut them entirely down, but that only answers for certain kinds, and for such as are grown in beds, but even with these it has a weakening effect, as they are so long denuded of foliage. Another strikingly ornamental plant for walls is the old Bignonia radicans, a plant that is not nearly so well known as its merits deserve. I well remember how much I was struck with it the first time I saw it in bloom, rivalling, as it did, many of the tender exotics grown with so much care under glass. The flowers of this fine old creeper are about 6 in. long, trumpet-shaped, and are borne in clusters at the ends of the young shoots, and as these are somewhat stiff and stand out from the wall 2 ft. or so, the whole are seen to great advantage. Bignonia radicans is a plant that requires a warm aspect and a light, dry soil to grow in, and if these conditions can be secured, it soon covers a large space. Before planting the best way is to drain the border at a good depth by putting in a layer of brickbats, which will quickly carry off surplus water during the winter, and raise the temperature several degrees; and if in addition to this the roots be kept mulched over in frosty weather the plant will be rendered tolerably safe. Many of the supposed tender plants would stand a great degree of cold if protected in the above-named manner, as the collar and the main feeders are the parts first affected, they being very susceptible of injury from rupture of the bark and sap vessels after being frozen through when gorged, as they are then, with moisture. One of the grandest plants for a south wall is the Exmouth variety of Magnolia grandiflora, a truly regal plant, having leaves nearly 1 ft. long of a very bright pleasing green colour, and Tulip-shaped flowers as large as a basin, that exhale a strong perfume resembling that of a cut Lemon. Near the west coast and in favoured localities this Magnolia is sufficiently hardy to stand away from the protection of a building; it then forms large, handsome shrubs on lawns, but inland, and in colder districts, it is useless attempting its culture in this way, as, although it may escape for a time, it is sure to get destroyed in the end. A deep, light, sandy soil suits it best, and in this it ripens its wood and flowers with more freedom than when it grows rampant, with large, pithy shoots. Lardizabala biternata, Ceanothus azureus, Escallonia macrantha, and Passiflora cœrulea will succeed in favoured situations, but are not to be depended on as permanent plants, one of the best of which for villa residences is Cratægus Pyracantha; that does well on almost any aspect, and is highly ornamental when laden with its coral-red berries. The habit and growth, too, are all that can be desired for a wall, and the branches admit of training horizontally along on wires with the greatest regularity. For the sides of porches, or other low, exposed positions of that kind, Berberis Darwini and stenophylla come in admirably, as they are very hardy, and have foliage of a bright, shining green; in addition to which, they flower in the most profuse manner possible during the early spring months. The way to treat them is to spur them in immediately their beauty is over, so as to afford time for fresh young growths to form, on which they bloom the following year. S. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

How to make Tropæolum speciosum Bloom.—I have had a hint given to me about Tropæolum speciosum which I do not remember to have met with in any cultural directions for that most capricious of plants. Mr. Liddell, who resides in St. John's Park, has succeeded in blooming it to his heart's content, and he says that the secret of success with the Scotch weed, as he calls it, consists in gathering up the roots into a small compass every autumn, and in not allowing them to wander over the border just as they like, to the right hand or to the left. This, in fact, appears to be the method usually taken with it in some places in the north, and its efficacy has been proved here in a most conspicuous manner. Three or four plants of it in my garden have done nothing except ramble all over the place, while Mr. Liddell has had a blaze of beauty which has been the admiration of everybody. He attributes the difference to the precaution referred to, though it may be added that he thinks it important that the plant should be grown in the shade.—Hy. Ewbank, *St. John's, Ryde.*

Variegated Rock Alyssum.—I find this to be most useful for edging beds, baskets, or vases for winter and spring effect, the variegation being constant. It is a plant of very easy culture; the smallest cuttings inserted under hand-glasses in May make beautiful tufts for autumn planting, and, in addition to the beauty of its foliage, it flowers as freely as the green-leaved variety.—J. Groom, *Linton Park.*

Dwarf Fuchsias.—It may interest Mr. Cornhill (p. 372) and others to know that there is at least one lovely Fuchsia quite suitable for fitting into geometrical designs, namely, F. pumila. Its maximum growth here during the season is from 6 in. to 9 in. high, and from 6 in. to 12 in. through, and it has been covered during the summer, and is so still, with pretty crimson flowers. It is used here for lines, and also for what are called dot plants on carpets of various kinds, and, to my mind, it is one of the very best plants which we possess for standing just above the ordinary carpet plants.—T. Smith, *Newry.*

Fuchsias amongst Ivy.—It is quite true that in many places Fuchsias grow into trees and do not get killed down in the winter, but, as a rule, that generally happens in seaside localities. In such cases they commence to flower as soon as they begin to grow, from the fact of all the wood of the previous year being thoroughly ripened; and, as a matter of course, in such situations there can be little need of the Ivy carpet; this would only be required where Fuchsias are annually killed to the ground, and where, of course, from having to make new growth quite from the bottom, they come into flower about August; and frequently this only lasts for about a month or six weeks, an early frost in September often spoiling the whole. No doubt those who prefer little trouble to long displays will adopt "A. D.'s" plan (p. 372), but others more industrious, who lift and protect their plants, will reap their reward in the shape of a longer season of bloom. If it were a fact that Ivy roots always travel in a perpendicular direction, there would be some force in "A. D.'s" suggestion to cut away the Ivy round the Fuchsia stems in the spring, add manure, and fork up, &c.; but the roots of the Ivy round the sides would run through the new dressing at once, and it is just possible that round the collars, where the coat of leaves should be thickest, the reverse would be the case. I would recommend "A. D." to try both plans next season, mine and his own, a bed on each side of his door, and give us the benefit of the experience thus gained next autumn.—T. Smith, *Newry.*

An Alpine Rue (Ruta patavina).—This is a most curious little species 4 in. to 6 in. high with gold-yellow flowers, and with the same odour as the common Rue. It is now in the Belvedere Garden at Vienna.—V.

The Rose-tinted Pampas Grass.—Owing to the favourable weather which we have had this autumn this variety of Pampas Grass has developed itself well here, and when associated with the ordinary type has a very pleasing effect, but to those having but limited space I would say do not plant it; coming into flower, as it does, so late in the season, the chances are that four out of five seasons one would be disappointed. Some forty or fifty spikes of bloom might show themselves, but never develop properly.—A. Hossack, *Ragley, Alcester.*

Plumbago capensis Out-of-doors at Vienna.—Referring to this subject, allow me to say that this plant is very much used out-of-doors here. We generally have plants of it from 4 ft. to 8 ft. in height, pyramidal in shape, and well furnished with side branches, so that during the flowering season good specimens look not unlike so many blue columns. They are planted out about the end of May or beginning of June, when all danger from frost is over, as the young growths are apt to be injured by late frosts. They begin to flower early in July, and continue in that condition until taken up, which is generally done about the middle of September, as sometimes sharp frosts occur in that month. After shortening in their side branches they are potted and placed in a temperature of 45°, in which they remain till the beginning of March; then they receive a somewhat close pruning in order to induce strong shoots to start for summer flowering, and they are kept rather cool and airy, so as to harden off previously to their being planted out. Groups of them consisting of about ten plants produce a fine mass of flowers, but they have also a fine appearance in the form of good single specimens on the Grass in warm sheltered positions. When in masses we sometimes place common Heliotropes amongst them, but one of the best is H. Anna Farell; it produces dark blue flowers in abundance, and has a most agreeable perfume. Besides single specimens small groups on the Grass have a fine appearance, flowering profusely, as they do, during the whole summer until they are lifted in autumn. Lantanas also do very well with us, and often throw out side shoots that reach a length of more than 2 ft., and that produce flowers in great abundance. These are plants which always produce a striking effect in the gardens at this place and elsewhere about Vienna.—Louis Kropatsch, *Laxenburg.*

Late Pansies.—No doubt this season the frequent and heavy rains that have characterised this autumn have had something—much—to do with the general abundance and excellence of Pansies this autumn and winter, now the last day of October. But late sowing is also a capital receipt for a late harvest of Pansies. April or May are good months for sowing the seed if flowers are wanted right up to Christmas. Sow thinly either out-of-doors or in pans or pots in a cold pit or frame. In either position it is needful to keep a sharp outlook for slugs and snails, both of which are particularly fond of Pansies, young or old, root or branch, or flower. A single snail will clear off a pan or plot of seedlings in a single night. Clean light soil should be chosen, a sandy loam with a dash of leaf-mould being the best. It is a good plan to bake or semi-roast all soils for the sowing of these and other small plants at that season. This can generally be managed on the tops of furnaces, but where Cannell's, Wright's, or other boilers of that kind are used, the means of roasting soils, so as to destroy all slugs or other insect pests and their larvæ, will not be available. A hot plate in such cases would be as useful in the garden as in the kitchen. The seeds are small, and should be sown thinly and covered lightly. As soon as large enough to handle, the Pansies should be pricked out at distances of from 2 in. to 3 in. square. When established and almost meeting in their temporary quarters, plant them out with balls where they are to remain permanently. They should never be allowed to flag for lack of water or to bear seed. The one enfeebles their vigour and shortens their life; the other limits the duration of the flowering period. For every pod of seed ripened there is probably the sacrifice of a score of flowers. The flowers are also smaller and in every way inferior when seed-bearing is allowed. Even the gathering of the flowers assists the plants to produce more and better. Should the plants show any signs of distress, a surface-dressing 1 in. or 2 in. thick with spent cow manure or a good soaking of manure water will generally revive and half carry them through the season in full flower. As regards kinds, little need be said, as all are more or less beautiful.—D. T. Fish.

THE FRUIT GARDEN.

NOTES ON PEARS.

Illustrations, like actions, often speak louder than words, and it is certain that, so far as appearance goes, the accompanying representations of Pears verify that proverb, for they are so true to Nature that descriptive notes as to their appearance are unnecessary. I shall therefore only say a word or two as to their quality and season of ripening. Léon Grégoire (fig. 1) is usually a moderate-sized Pear, but under good culture it will attain the first rank in this respect. When fully ripe, as it generally is at the end of October and beginning of November, it has the same coloured skin as Chaumontel, viz., a deep russetty red, and, like that variety, it is also rough to the touch. Its flesh is sweet and juicy, but nearly always gritty at the core. It is a very profuse bearer when grafted on the Quince. Verte Longue Panachée (fig. 2) is a novel-looking as well as a very good dessert Pear, but it is a shy bearer, hence its rarity. The skin is distinctly marked, as shown in the annexed illustration, with dark green and yellowish-green lines, and sometimes, though seldom, both wood and leaves are similarly marked. The flesh is quite white, buttery, and melting. It ripens about the end of October, and is soon over. Deux Sœurs (fig. 3) is one of the best eating and also one of the finest looking Pears in cultivation; in flavour it nearly equals Doyenné du Comice, and it is as productive as Winter Nelis. Grown on a west wall, the fruit ripens by the end of October, and on standards early in November. The tree is of good, sturdy habit, and makes handsome pyramids. Vauquelin (fig. 4), unlike the preceding, has size only to recommend it. It is always of large size, but as to quality it should only be used for stewing, a purpose for which it is well suited. It ripens in November, and will keep good for a considerable time. De la Motte (fig. 5) is a very fine dessert Pear and a near relative to Gansel's Bergamot. It has a rich, buttery, aromatic flesh. Its skin is almost entirely russetted with patches of red on the side next the sun. It is a good grower under all circumstances, and seldom fails to fruit abundantly. Grand Soleil (fig. 6) is a medium-sized Pear of but second-rate quality. Its skin is rough and very brown, with a tinge of yellow

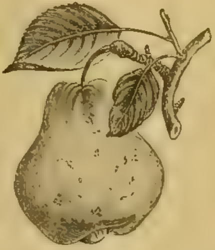


Fig. 1.—Léon Grégoire.

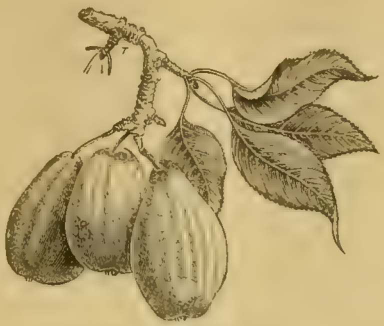


Fig. 2.—Verte Longue Panachée.

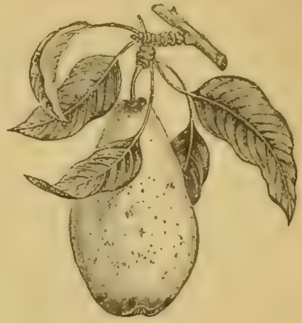


Fig. 3.—Deux Sœurs.

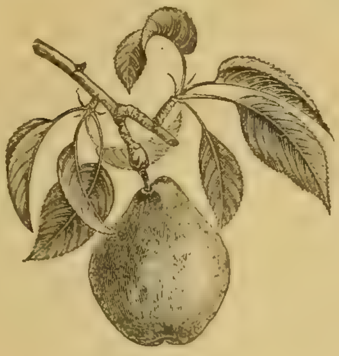


Fig. 4.—Vauquelin.

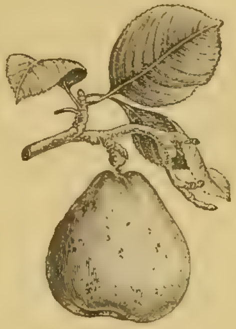


Fig. 5.—De la Motte.

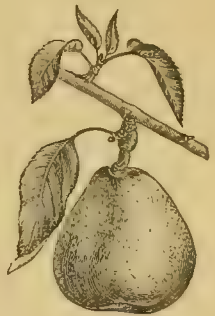


Fig. 6.—Grand Soleil.

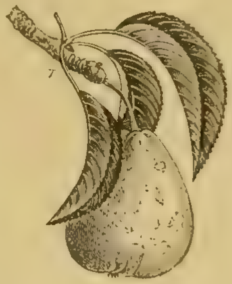


Fig. 7.—Virgouleuse.

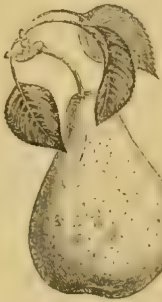


Fig. 8.—Madame Elisa.

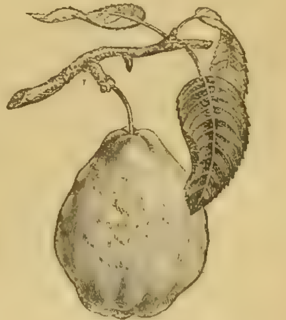


Fig. 9.—Glou Morceau.

When fully ripe the flesh is very white and sweet, but gritty at the core. On the Pear stock it is a shy fruiter, but on the Quince it would doubtless do better. Virgoulense (fig. 7) is a Pear that is very little grown, though it is one of the best. The fruit is of medium size, and fine in appearance. Its skin is greenish-yellow with dots of russet, changing to a rich yellow when fully ripe. Flesh white and melting, with a delicious aroma. The tree is a good grower and bears moderately well; it deserves a wall and to be included in the most select collections. Madame Elisa (fig. 8) is a very handsome, large Pear, the skin of which is a bright russet with greenish-russet on the shaded side. Its flesh is yellow, moderately rich, and slightly perfumed. It is ripe early in December, and is soon over. Glou Morceau (fig. 9) is one of our standard varieties, and one which is found in almost every garden; it is, therefore, too well known to need description, not the least of its many good qualities being that it will keep for a long period in good condition after it is fully ripe. It ripens in December and will sometimes keep till February. W. W. H.

PREPARATION FOR THE FORCING SEASON.

Vines which have to be started in November will now be pruned, or should have been a month ago—at least, if they are to escape bleeding after being started—and no time should be lost in pruning such as have to be started between now and Christmas. On the subject of pot Vines I may state that I have this season received from a London firm some of the finest pot Vines I have ever seen, only that they were not quite so ripe as they might have been, but still well finished. My opinion is that many Vine growers in the trade turn their Vines out-of-doors too soon, in the belief that being put out in the cold ripens the wood, which is a great mistake. The wood can only be ripened perfectly in a suitable temperature; in other words, the heat should not be withdrawn till the wood is quite brown and hard, and the laterals also up to the first pinching or joint at least. This ensures well-ripened buds, and is a good guide to go by. While the laterals are green or only half ripened down to the junction with the main rod, the scales of the buds will be green and soft also, and no Vine is fit for forcing in that condition. As to washing and dressing Vines previous to forcing, many cultivators have now given up the practice, without experiencing any extra annoyance from such pests as thrips and red spider, and much labour is saved. Where bug exists upon the Vines it is different, and one cannot be too particular in scouring the Vines and the Vinery, in painting and whitewashing, and cleaning the border. The glass should always be kept clean, so as to let as much light in upon the leaves as possible. I do not think a Vine border should at any time be allowed to get dry, but before the Vines are started it should get a thorough soaking, if with manure water all the better. My plan is to stir the surface of the border slightly, and top-dress liberally with Standen's manure; then mulch 3 in. or 4 in. deep with some rotten manure, and water well with water at a little higher temperature than that of the border, pouring it on till the drains begin to run copiously, which is a guarantee that enough has been supplied. In the case of borders that have become hard and impervious, and do not take the water in readily at first, as is nearly always the case in old borders, the advantage of mulching before watering will soon be made manifest. When the border is forked only, the water is apt to run away through holes and fissures without touching the soil; but the mulching holds it like a sponge until it soaks away gradually. There is little danger of old Vines not breaking away freely at every bud; but young Vines, on which a considerable length of young wood is left, are apt to miss at the lower buds if trained straight up the rafters, but if the rods be temporarily unslung and laid horizontally along above the front pipes, they will break satisfactorily.

Peaches.—Early houses of these will need to be pruned immediately, though in their case bleeding is not to be apprehended. In pruning the Peach the object should be principally to remove old and bare branches or shoots, and retain those which are young and fruitful, and unless the shoots are imperfectly ripened or weak and spindly towards their extremities, with no fruit buds, they may be left entire. Should it be necessary to cut any back the cut must be made at a leaf bud, else the shoot will die back to one during the season. I do not think it is an advisable plan to tie the shoots in permanently till the fruit has set, for the reason that the fruit sets better when the branches are free, and when it comes time to look over the trees in spring to see what more shoots may have to be removed, as is often necessary when trees have not been sufficiently thinned out previously, the work can be done more conveniently. It is not necessary to dress Peach trees as a preventive against insects, except scale, and when that is found upon the trees the only plan is to clear them off with a stiff dry brush, taking care always to brush up so as not to rub off the buds, and afterwards the trees should be painted with some insecticide to suffocate those which are left or seal them up; brushing alone does not clear the trees effectually. Far more mishaps occur in the forcing of the Peach than the Vine, and principally because the trees are subjected to a too high or too low a temperature, or an atmosphere that is too dry or too wet. In my own case I may state that I am very particular about my Peach houses during the setting and stoning periods, much more so than with Vines and other plants, neglecting nothing that is likely to contribute to success, and perhaps this may partly account for the fact that during the last twelve years I have never lost a crop of fruit in my early house. The crop has varied once or twice, has been light, but the trees have never failed to produce a crop. My practice from the time the house is started is to run the temperature up in the daytime considerably higher than is usually recommended, perhaps 10° or more, and to drop proportionately at night, never feeling uneasy if the glass does not drop to within a degree or two of the freezing point up to the time the fruit is fairly set. No damping or syringing is allowed, except once in the afternoons of fine days when, with the aid of hot pipes and sun-heat together, the temperature has been pretty high and dry, and no difference is made when the trees are in flower, except that no favourable opportunity is lost of giving the blossoms a good dewing at shutting-up time. The winter's sun has not power to raise the temperature of a Peach house high enough, and for that reason I fire more on sunny days than on dull ones in order to make the most of these, realising that more progress is made when the trees are in flower, particularly during one good sunny day with a high temperature and ventilation, than during a week of dull weather. Hence, when the flower buds are just on the point of expanding and the weather is dull or wet, keep the trees still, or barely moving, and when the sun shines get up heat with the light and make the most of the opportunity.

Strawberries.—I like these to stand out-of-doors till they have had a touch of frost, which gives growth a decided check, when they are afterwards stored in cool pits or houses and kept rather drier. After the beginning of December forcing should begin, and the plants may be pushed on under the influence of a day temperature of from 60° to 70°, according to the weather, and a temperature of from 40° to 45° at night, figures which should not be exceeded; in fact, the directions given for the Peach in the matter of forcing apply also to the Strawberry. J. S.

RIPENING YOUNG WOOD BY ROOT PRUNING.

It has, on the whole, been a rather dripping autumn, more favourable to continuous growth than perfect maturity. Such seasons are rather unfavourable for our fruit prospects next year, for it is generally acknowledged by cultivators that more fruit crops are wrecked through immature wood than by severity of weather. Green wood either flowers imperfectly or not at all, or is injured or killed after or before it flowers; either way there is but small chance of a crop of fruit. Hence the importance of adopting every possible means of completing the ripening of the wood. These means consist mainly of top and root pruning, and the shielding of the late autumnal or winter rains off the roots. In the case of Vines and other fruit trees under glass this is comparatively easy. All laterals and superfluous wood should be removed, so as to admit as much light as possible to the base buds that are to be reserved for fruit bearing. Meanwhile, the borders may also be covered with iron or wooden shutters, or thatched with litter, so as to shed off the rain. An artificial climate of any desired degree of heat and of aridity may also be maintained, so as to force, heighten, or hasten the maturity of the wood. But out-of-doors the cultivator is more at the mercy of the elements. But, though he may be unable to shed off or check the downfall of the rain he may prevent the roots from absorbing water in excess by the simple expedient of pruning them. Cut off thus from an excess of watery food, the plants, instead of continuing to grow till growth is checked by the frosts, will cease extending themselves at once, and complete the ripening of the wood and buds already formed.

In root-pruning for the special purpose of ripening the wood, it is not needful to carry it to the same extent as when it is done to check growth and force fertility. If only a few of the gourmands or grosser-feeding roots are severed, that will be sufficient. At the same time, all superfluous leaves and shoots should be removed from the tops, so that the light and air may have free access to every bud and branch. By such means the wood will become hard and brown, the buds be filled up into plumpness, and the whole tree the better prepared to withstand the severities of winter and the almost greater rigours of our trying springs.

The plan of laying fruit tree borders on a slope from the wall to the walk, so that the major part of the rain should run off, is also a good one for assisting the maturity of the wood. The super-cropping of fruit tree borders in the autumn should also be avoided. The practice keeps the soil colder and damper than it otherwise would be, and exactly as it does this, in the same ratio does it hinder the maturity of the wood. D. T. Fish.

COE'S GOLDEN DROP & ITALIAN PRUNE PLUMS.

The best autumn Plum in cultivation is Coe's Golden Drop, which will keep good for weeks if gathered before it is over-ripe. We have had good fruit of it for dessert in December by keeping it in a dry room. It grows and fruits freely on both east and north walls. We have had no experience of it as a standard, but the tree has a good constitution, and would, no doubt, do well in that form. The Italian Prune or Quetsche d'Italie is also another very excellent dessert Plum, having somewhat the same characteristics as the preceding, with the exception of colour, which is a deep purple. The flesh is yellow and very rich and full flavoured, rendering it a most desirable variety to cultivate. W. W. H.

Coe's Golden Drop.

Quetsche d'Italie.

POT VINES FOR TABLE DECORATION.

Though I have objected to table decoration with plants, at least to the extent to which it is carried at present, my objections do not extend to fruiting plants in pots, like the pot Vines grown by Mr. Sage, and figured in The Garden of last week (see p. 405). I have long ago seen Mr. Sage's plan carried out successfully and on an extensive scale, and it answers well enough under some circumstances, as, for example, when the Vines are well grown and the fruit well finished (by no means a common thing with pot Vines), and when the plants could be had ready at the proper season. I am by no means sure, however, that the fruit keeps plump a long time after the cane is severed below the small pot, as "A. M." states. In summer time the plants droop rather badly after a while, and the fruit shrivels. What else could be expected? The plan of placing the plants upon the table in a growing state, or even in an apparently growing state, is a good one, and worth carrying out; and perhaps some of your readers who have not the means of growing the Vines specially for the purpose will find the following plan worth trying, and just about as good as any, and quite practicable with any one who has a Vinery: Get an iron stand, or one consisting of other material, made and coloured in imitation of a Vine stem, hollow inside, in order to hold water, and with half-a-dozen branch-looking projections, 2 in. or 3 in. long, the top of it also being hollow. Set this stand upon the table, fill the hollow tube up with water to the top, and then cut off a few Vine shoots with handsome bunches on them and well furnished with leaves, stick them into the holes and secure them, and you have at once a table pot Vine made to order without the trouble of growing it, and quite as effective as if it had been grown for the purpose. It does no harm whatever to the Vine to cut off the branches with the fruit, and you can have half-a-dozen sorts in the same stand if you like. This is my idea of preparing pot Vines for the table, and it has at least the merit of being cheap and easy, and it is quite as legitimate a way of setting up Grapes for dessert as piling them in a heap on a dish. Pot Vines are not grown for such purposes without considerable trouble and expense. I find, however, that I have been anticipated in my ideas. The practice of sticking the branches of the Vine into vases for table decoration is practised in Paris. Examples were shown at the Exhibition by M. Salomon, of Thomery. He had a rustic vase stuck full of branches of Chasselas de Fontainebleau, but of a shape to give a bush form to the Vine. At Thomery I observed also that M. Rose Chameaux was preparing table plants in the same way as Mr. Sage does, only his were grown outdoors against the walls. J. Simpson.

Wortley.

—— The plan adopted by Mr. Sage for producing elegant pot Vines well fruited for the decoration of the dinner table is not new in conception, but there is some novelty about the way in which it is worked out. Mr. William Cole, of The Grove Vineyard, Feltham, and formerly of Ealing Park, has grown literally hundreds of pot Vines for the same purpose. His practice differs from that in use by Mr. Sage in this respect, that the 7½-in. pot used by him to be the future plant basis is dropped over the Vine rod down to the top of the soil in the large or root pot, so that more of the rod is utilised than is the case in Mr. Sage's plan. The stem of the Vine is also kept free from laterals, all the fruiting wood being trained to the flat wire top, which is from 18 in. to 24 in. in diameter. The uprights consist of stout iron rods, having at the base three claws, which fit into the small pot, and when this is filled with soil and well pressed keeps the plant secure. From Vines grown in this way Mr. Cole has taken bunches weighing 1½ lb. and 2 lb. each, and he has also found that plants would keep fresh and the berries plump two months after the rod had been severed from the old roots. This I have learned from himself, and I have in years past often seen the results of his experience. Whilst at Ealing Park it was also his custom to train a couple of pot Vines over an arched wire trellis some 12 in. wide, and having a span of about 5 ft. across; this, when well fruited, formed an elegant adjunct to the sideboard of the dining room. A. D.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Apples and Pears in Northern Districts.—I was greatly surprised to see (p. 380) such Pears as Duchesse d'Angoulême, Chaumontel, Passe Colmar, Easter Beurré, Beurré Rance, and Ne Plus Meuris recommended for a northern climate, as it is a well-known fact to any one at all acquainted with those varieties that they are about the worst and most uncertain of any Pears that can be grown. Even in warm districts it is seldom they are at all up to the mark, unless grown on sunny walls in dry, congenial soils, and then they are in no way equal to many others that can be depended on to come good in less favoured aspects. Such kinds as the above may do very well in the Channel Islands, but I venture to say your correspondent has never yet tasted a good Chaumontel, Duchesse, Beurré Rance, Easter Beurré, or Ne Plus Meuris grown outdoors in Lancashire, unless on a south wall. These three latter are not to be compared with Josephine de Malines and Bergamot Esperen, which are the two best late Pears in cultivation. Again, among the early sorts recommended no one would think of growing Doyenné d'Eté and Citron des Carmes who had ever eaten a Beurré Giffard, or a Williams' Bon Chrétien, and those superb autumn Pears Beurré d'Amanlis and Beurré Superfin are far superior to others named that come in at the same season. There is no mention made of Doyenné du Comice, a Pear that should be in every collection, however small, as it is really first-class in every respect. As the present is the season for planting, and as much disappointment necessarily follows getting such as do not ripen properly, the opinion of others of your correspondents would just now be of great value. The list of kinds I would recommend is as follows:—Beurré Giffard, Williams' Bon Chrétien, Beurré d'Amanlis, Beurré Superfin, Louis Bonne, Marie Louise, Doyenné du Comice, Beurré Bachelier, General Todleben, Josephine de Malines, and Bergamot Esperen—to ripen much in the order named.—S. D.

Dessert Pears.—Thompson's Pear we are now using along with Fondante d'Automne, both of which are of great excellence and good bearers.—R. Gilbert, *Burghley.*

PLATE CLIII.

WINTER AND EARLY SPRING CROCUSES.

Drawn by H. NOEL HUMPHREYS.

Included in the fifty or sixty known Crocuses there are several midwinter-flowering species which keep up an unbroken succession between the autumnal and the late vernal species, though, till within the last four or five years, few of them, since the time of the late Dean Herbert, have been in cultivation. We select for this week's coloured plate four of the earlier vernal species from Mr. G. Maw's collection at Benthall, which now includes, with the exception of five or six species, every known Crocus, mostly obtained from their native habitats by Mr. Elwes and himself.

Crocus chrysanthus (figs. 1, 2, and 3) was known to Dean Herbert, but had been long lost to cultivation till Mr. Elwes in 1874 re-introduced it from the neighbourhood of Smyrna. It appears to be a common species in Bithynia, where Mr. G. Maw, during his recent tour in the Levant, collected bulbs in a number of localities, including Mount Olympus, at an altitude of 3500 ft., the flanks of Olympus east of Broussa, at an altitude of about 1000 ft., on the Taktalie Dagh, the Nymph Dagh, and Yamaulah Dagh, near Smyrna, at a height of from 2500 ft. to 4000 ft., and within a few hundred feet of the sea level between Gemlik and Broussa. It belongs to the annulate section, the corm resembling that of Crocus biflorus. The stigmata are entire, trivaricating high up in the flower, generally bright scarlet but occasionally pale orange. The species has a great range of variation, both as regards colour and size, also in the length and colour of the stigma, and in the character of the foliage. The typical form has flowers of a clear unstriped orange, but there are also an endless series of varieties, brindled and striped with bronze—some as dark and rich as the Cloth of Gold Crocus, others uniformly freckled with bronze externally on the three outer divisions of the perianth, and the form from Mount Olympus is beautifully variegated with distinct patches of bronze at the throat, and suffused with bronze and purple towards the extremity of the limb.

Crocus Fleischeri (fig. 4) was at one time cultivated at Spofforth by the late Dean Herbert, but had been long lost to English gardens till Mr. Elwes in 1874 re-introduced it from Smyrna. Though delicate and fragile in stature, it appears capable of ready multiplication by the formation of small bulbils round the base of the corm. Mr. G. Maw introduced a further supply of the bulbs in 1876, and in 1877 again collected it largely on the Hippurite limestone plateau of Boujah, near Smyrna, where it is by no means uncommon. It also occurs in Cilicia and in Lycia, where it was collected by Forbes. Crocus Fleischeri has no near ally. The dark, brick-red, branching stigma is remarkable, and the corms differ from those of any other species in their golden-yellow colour and singular tunic, which consists of silky fibres arranged in interlacing strands or plaits vertically disposed over the corms.

Crocus reticulatus (M. Bieb.)—C. variegatus (Hoppe and Hornsch) (fig. 5)—is remarkable for the densely reticulated corm tunic, consisting of strong wiry fibres, resembling the tunic of the Cloth of Gold Crocus (C. susianus), with which Dean Herbert erroneously confounded it as a variety. It is an elegant early vernal species, with entire scarlet or orange stigmas, and a narrow finely-pointed limb, varying in colour from white through shades of lilac to purple; the three outer divisions marked with three distinct dark purple-feathered stripes. The Carse, a great limestone plateau above Trieste, is its most western habitat, where it occurs abundantly, both on Mount Spaccato and in the Lipizza Forest, extending eastward to Odessa, Hungary, Podolia, the Banat, and into Asia Minor and the Caucasus, and perhaps southward into Dalmatia, as Visiani's Crocus dalmaticus, with a rather finer corm tunic and self-coloured violet limb, is considered a variety of it.

Crocus Crewei (fig. 6) was discovered in the island of Syra, one of the Cyclades, by Mr. Elwes in 1874, and three bulbs only, which were casually dug up with other species, appear to have been imported. One of these, which was received by the Rev. H. Harpur Crewe, who was one of the first horticultural botanists since Dean Herbert's time to make a speciality of the Croci, flowered at Drayton-Beauchamp in 1875. The other two fell to the lot of Mr. G. Maw, who has been fortunate in preserving and multiplying them. Crocus Crewei seems to be nearly allied to C. biflorus, but is remarkable as being the only species having dark, chocolate-coloured anthers.

Crocus alatavicus (figs. 7 and 12).—For the introduction of this, two varieties of which are included in our plate, English horticulturists are indebted to the liberality of Dr. E. de Regel, director of the St. Petersburg Botanic Gardens. It has been flowered recently at Kew and by Dr. Wallace and Mr. George Maw. It seems to vary considerably. In one variety, flowered by Dr. Wallace, from which fig. 12 is taken, the exterior limbs are externally freckled with bright claret-purple; another variety occurs without any external markings, and, judging from analogy, it is not improbable that distinctly-striped varieties may also exist. This species is of special interest to Crocologists, as its occurrence in Central Asia carries the distribution of the genus a thousand miles further to the east than any other known species.

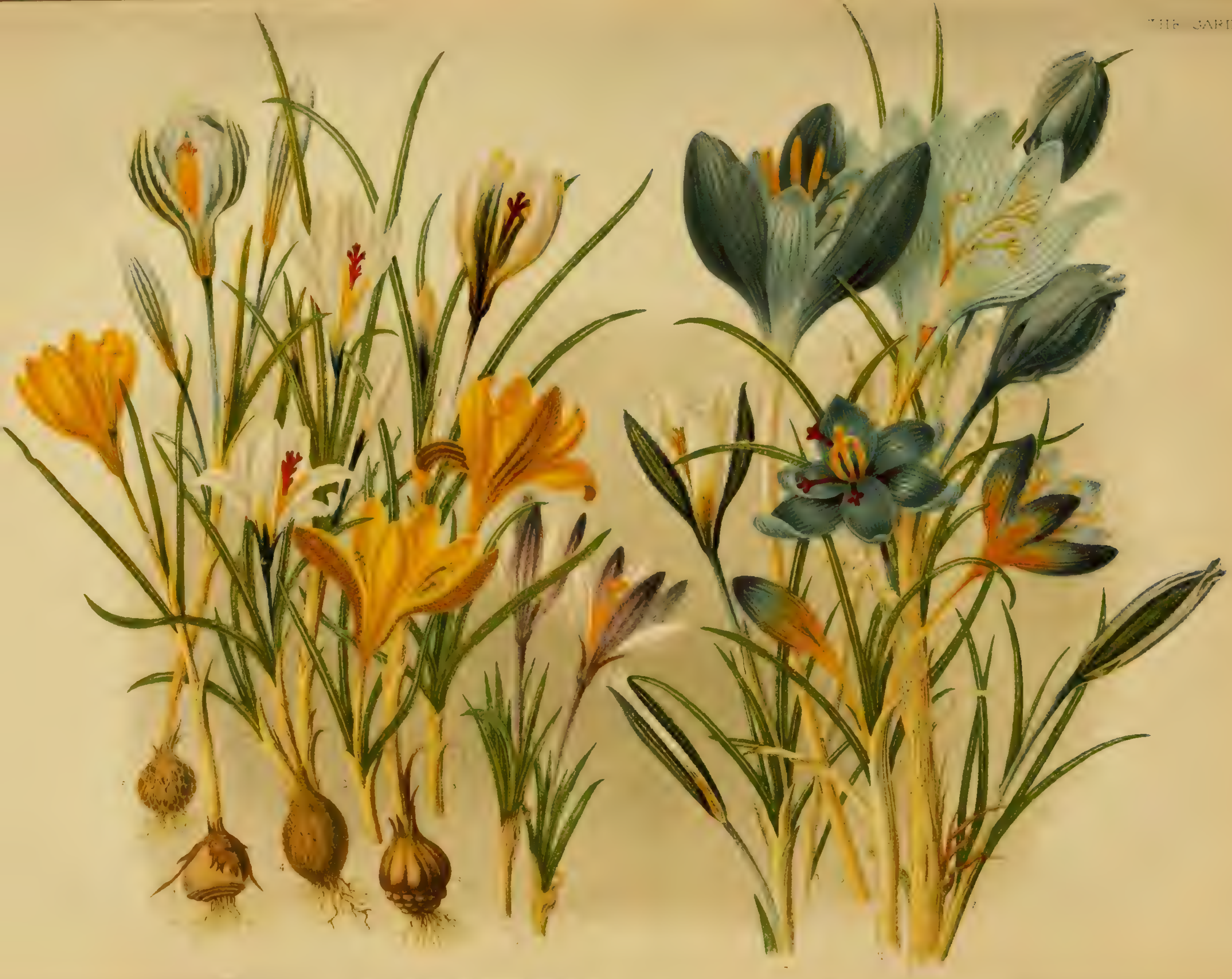
Crocus byzantinus (fig. 8)—C. iridiflorus of Heuffel.—A native of the Banat and Transylvania, flowering from the end of September to the middle of October, and is remarkable for its dark purple stigma and the small size of the three inner limbs. The corm is very flat in form and covered with a thin delicate fibro-membranous tunic. The leaves, which are exceptionally broad, succeed the flowers, and are not produced till the spring. It was cultivated in this country by Parkinson, and is now to be found in most collections of Croci.

Crocus pulchellus (fig. 9).—An abundant species on the shrub-covered hills bordering the Bosphorus, and found also by Mr. G. Maw on the Bithynian Olympus up to an altitude of nearly 4000 ft. The flowers, which are produced abundantly through September and October, are usually of a pale bluish-lilac veined with thin purple lines internally with a golden-yellow throat; the anthers are white or cream colour and the filaments covered with short hairs. The corm is annulate in structure, resembling those of biflorus and chrysanthus. A white variety occurs sparingly both on the banks of the Bosphorus and Mount Olympus.

It is probable that the whole of the orange Croci, of which there are ten or twelve known species, vary with bronzed forms. Crocus stellaris may possibly be a garden hybrid between C. aureus and C. susianus, as its corm-coat partakes of the reticulated structure of the latter species, and C. sulphureus striatus a garden form of the self-coloured C. aureus, as they are not known in the wild state, and it is possible that Crocus vitellinus and C. syriacus may respectively prove to be the self-coloured and variegated forms of one species; indeed, the colouring of a Crocus flower is the least important distinguishing character. Many of the species, notably in the case of C. cancellatus, vary in colour and markings from every separate locality; and widely distinct species growing together often put on identical colouring and markings. In the case of C. cancellatus var. Mazziaricus, and C. hadriaticus var. chrysobelonicus, which occur mixed up together in the Island of Santa Maura, both of which varieties differ from the type forms, and though widely separated as species, the two varieties are so precisely identical in their colour and markings as to be scarcely distinguishable without close inspection. In the case of Crocus vernus, from which all our large purple, white, and striped varieties have been raised by the Dutch, seminal variation seems to be an intrinsic character, as in the wild state almost every individual flower differs somewhat, ranging from deep purple to white, through an endless series of striped forms corresponding with nearly every variety in cultivation.

In a horticultural sense this beautiful genus has not been made the most of; out of between fifty and sixty species, nearly all of which are now in English gardens, only three, viz., vernus, aureus, and susianus, are grown to any extent in Holland, and not more than six or seven have been made use of for horticultural decoration in this country. We would commend this fact to the bulb-growers of Holland, where the soil is so specially suited to the growth and multiplication of Crocus corms. Whether hybridisation would be practicable is open to question, as wild hybrids, if they occur at all, are very rare, but the native species of the genus would afford all-sufficient variety without crossing, and a constant succession of beautiful forms from September to March all through the dull flowerless months of winter. G. M.

Crocus vitellinus.—This rare and beautiful Crocus we noticed in flower the other day in the Kew collection. It is the only yellow-flowered autumn kind at present in cultivation, and on this account is especially noteworthy. It much resembles the well-known spring-flowering C. aureus, having flowers of a rich yellow colour, and the leaves partially developed at the same time. It is a native of Syria, and is one of the numerous introductions to cultivation of Mr. Maw, of Benthall Hall, Broseley.—W.



FLOWERING AUTUMN AND WINTER FLOWERIN

GARDENING FOR THE WEEK.

Indoor Plant Department.

Plant Stove.—The prevalent idea with many who grow stove plants is, that to give them the necessary rest in winter they must be subjected to a temperature sufficiently low to stop growth, even when the soil in which the roots are placed is kept somewhat moist; but where this course is pursued it reduces the value of the stove in winter nearly one-half through keeping the heat so low that the plants required to be kept moving can make little or no progress. To avoid this proceed as follows: Most stove plants that are of a deciduous, or partly deciduous, character, will bear the soil being kept so dry as to induce a state of rest even when kept in a temperature sufficiently high to excite growth, if there were enough moisture in the soil to admit of their making such. By gradually withholding water from the roots of Allamandas, Clerodendrons, Bougainvilleas, and plants of a similarly vigorous yet partially deciduous nature, they may be subjected to the requisite course of rest in a temperature high enough to keep plants that need more heat growing. The supply of water must not, however, be cut off all at once; first, withhold it until the leaves flag freely for a day or two, then give a little, but only a little, and when the plants flag a second time let them go a little longer before water is given; after a few repetitions of this kind the leaves will turn yellow and fall off, and the plants will subside into a state of complete rest through the perfectly dry conditions of the soil. In the same way Gloxinias, Achimenes, Caladiums, and the tuberous-rooted Gesneras can be kept dormant during the required period, at the same time keeping up a heat of 65° in the night with 5° higher in the day, which temperature will be sufficient to preserve many plants in a growing state that with a lower temperature would make no progress at all. In cases where plants at rest, and others making growth, are kept through the winter in the same house, it will be advisable to put those that are dormant at the coolest end, leaving the warmest end for the plants required to be kept growing; at the same time the atmosphere should be more humid than if there were less heat, but this should not be overdone so as to cause a great amount of drip from the condensed moisture on the sash-bars and roof glass, as this, by falling on the soil of the plants at rest, would cause a greater disposition to grow than would be desirable. By adopting the above course such subjects as Gardenias, Ixoras, Cochliostemas, Dipladenias, Eucharis, Gesnera zebrina, Ipomœa Horsfalliæ, Euphorbia jacquinæflora, and many others that will not flower well in winter with a lower temperature than 65°, or that will make but indifferent progress in the summer if kept lower than this during the winter, can be managed satisfactorily with the plants at rest. Plants like the hard-wooded, evergreen portion of the above must never be allowed to get too dry at the roots or they will suffer serious injury, being wholly unable to bear the treatment recommended for those subjects that cast all or the greater portion of their leaves in winter. The sweet-scented Stephanotis floribunda, in the matter of watering, needs an intermediate treatment from that bestowed upon the above divisions of plants, for to continue it at rest in a house where a temperature such as above indicated is maintained, it must have the coolest place with no more water than will be just sufficient to keep the leaves from shrivelling, as if the drying process be carried too far the foliage will suffer, thereby entailing serious injury on the plant. All the air given should be admitted at the coolest end of the house. This will still further assist the object in view.

Cinerarias.—If, early in the spring, a little Cineraria seed was sown to flower during the first months of the year, the plants, if they have been regularly attended, will now be beginning to push up their flower stems. Even should the pots appear small for the size of the plants, do not be tempted to give them larger ones, as no additional pot room now will improve them in the least, for when they have already begun to push up their bloom stems the slightest interference with their roots will seriously detract from their proper development. The strength of the flowers will be increased by giving them regularly weak manure water. Do not attempt to force them into bloom, as such a process will only end in disappointment by inducing a weak, puny condition; a temperature of 45° in the night will be found sufficiently high.

Orchids.—One of the first essentials as regards the healthy development of Orchids is cleanliness. By this I mean not only a freedom from insects, but also a perfectly clean state of the leaves. The moist atmosphere of an Orchid house is at once calculated to cause dust and soot, that are sure to find their way inside when air is given, to adhere to the leaves and pseudo-bulbs. On plants that are little subjected to syringing the dust accumulations have nothing to interfere with them; those who syringe more freely, especially such genera as Vandas, Aerides, and Saccolabiums, the dirt is washed down into the axils of the leaves, where it gathers to an extent that makes the surface at their juncture with the stem completely coated with a black deposit. This has the effect, even after its removal, of causing the portion so covered to have a pale, sickly look, the result of which is that plants that are allowed to get in this condition shed their lower leaves sooner than others kept in a more cleanly state; the effects of this loss of leaf being not only to give them an unsightly appearance, but to weaken them. Large quantities of Orchids are grown in the immediate neighbourhood of towns, the soot-charged atmosphere of which seriously affects them in this way, and unless repeated sponging is resorted to, it is impossible to keep them as clean as they ought to be; but this work should never be done by careless or inexperienced hands. It is no uncommon occurrence to see the leaves of Vandas, Aerides, and the like split and cracked through for want of sufficient care in the cleaning operations. Beyond the accumulations of dirt which thus reach the plants there is another cause through which they often suffer in this way, and that is, where the water employed for syringing is impregnated with anything that leaves a dirty deposit on the leaves, as is often shown by the white appearance, as if chalk or lime had been present in the water; the effect of this in clogging up the pores cannot be otherwise than to injure them. Water of this character should never be used; and where it is necessary to obtain it from springs or other sources in which a like condition exists, means should be taken to secure a sufficient quantity of rain water, which, if not enough for all purposes connected with the requirements of the plants, should be reserved for syringing.

Insects on Orchids.—With these it is necessary to keep up a continual warfare, especially where the worst description of insects exists, particularly white and brown scale. Periodical brushing and sponging, which admits of their getting on the plants during the intervals in large quantities, do not free them from the presence of these pests in a way desirable. If, in place of thus treating them such as are affected are repeatedly gone over, and all that could be discovered destroyed, they would in time get exterminated, when not only would the labour be very much reduced, but the health of the plants would be improved. The uninitiated in Orchid culture are frequently tempted to try some of the many insecticides now before the public, but I would particularly recommend care being exercised in the application of these, as I have often seen valuable plants all but ruined by their use. All the dressing that I have ever found safe to apply to Orchids, beyond a sponge and brush, the latter especially used with care, is dusting slightly ordinary Scotch snuff inside the axils of the leaves of such plants as Vandas and Aerides, where the white scale gets down into a position that renders their removal difficult without injuring the plants; it is, indeed, only on the lower fully-matured leaves that I should recommend the snuff to be used. It should be dusted in from a bit of very fine gauze doubled two or three times and formed into a small bag, and when allowed to remain on the insect-affected places for ten or twelve days it will usually be found to have destroyed them. The plants should then be laid on their sides and syringed freely with tepid water until the snuff is removed; finish by sponging. There is no more fitting time than the present for a thorough cleansing of the interior of Orchid houses, washing the glass so as to admit as much of the diminished sunlight as possible, scrubbing the bars and rafters, and thereby removing the slimy deposit that always more or less accumulates in a comparatively close, moist atmosphere. If requisite, the surface of whatever brickwork exists should be limewashed, which will further increase the light. This, with a thorough cleanly condition of the pots in which the plants are grown, and the stages on which they stand, will place them in the most favourable condition for passing through the winter.

Winter Temperature.—In collections consisting of anything beyond a comparatively few varieties, either of Mexican or East Indian plants, there is no time throughout the year when all are at rest, for even during the last few weeks in the year and a corresponding period at the commencement of the ensuing one there will be some that are making growth, but, as a matter of course, the treatment both as to temperature and atmospheric moisture should be such as to suit the wants of the greater portion which are at rest. To meet this the plants that are growing should be placed at the warmest end of the respective houses which they occupy. Here they must receive enough moisture at the root to supply the requirements of the slower growth which they will at this season make. So far as the atmospheric moisture is concerned, taking into account the necessities of the majority which are at rest, and the now minimised drying influence of the sun, it becomes requisite to keep the atmosphere comparatively dry, yet not so as to cause the plants to shrivel too much, neither should the majority be kept too long with the whole of the material in which their roots are placed so excessively dry, as is sometimes done under the impression that by such treatment the plants will be brought into what may be termed a condition that will force them to flower. Extreme treatment of this sort may possibly further the production of a few meagre flowers; but the blooming, collectively, will always be indifferent unless the management through the growing season has been such as to favour the requisite solidity and fully developed state of the growth essential to a free production of flowers, and, where the plants are wanting in this condition, it is much better not to attempt, by any undue, severe drying up to make them bloom. I have been led to again speak more fully on this subject through often seeing those inexperienced in the cultivation of these plants adopt the course of treatment here indicated as wrong. The same mistake is frequently committed by young growers in simultaneously withholding water at this season from their plants collectively, by which means all with immature, unfinished growth are soon reduced to a shrivelled up condition, by which much injury is done, as, after water is again applied, it is only in very few instances that the unfinished growths can be induced to make any further progress; but, instead of this they push up from the base, and, as might be supposed from the state of the pseudo-bulb, with its weak, totally unprepared buds at the base, the forthcoming growth is almost certain to be weak and unsatisfactory. In the whole range of plant-growing there is nothing more remarkable than to notice amongst even the best growers how varied is their success with different families or species, some individuals succeeding very much better with one section than others. This I recently alluded to, and, in addition to the cause then assigned, there is no doubt that the winter temperature, or, in other words, the rest that some species of plants get, has much to do with their well-being. I may point to Phalænopsis in confirmation of this, one of the most beautiful, at the same time less generally well-grown, families of Orchids ever introduced. It is no uncommon thing to see plants of these for a few years making large, almost too vigorous, growth, and after this become diseased through the leaves spotting and ultimately dwindling away. I have seen Phalænopsis go on uninterruptedly for a lengthened period without any check where the night temperature for the next three months would average rather below than above 60°. Under such conditions, when they are also confined to a moderate heat in the growing season, the leaves they form are never so broad and long; but they are considerably thicker and stouter, the plants collectively carrying a greater number consequent upon their lasting much longer than where they were formed, and the plants wintered, under correspondingly higher temperature.—T. Baines.

Flower Garden.

Wherever a system of spring bedding is intended, the planting of the various species of plants and bulbs should be finished as soon as possible, in order to give the plants used for the purpose time to establish themselves in their new position before severe frost or winterly weather sets in. It is also quite time that all bulbs used for this purpose should be in the ground, in order to induce, as much as possible, early flowering, and the consequent early ripening, of the bulbs, so as to admit of their being taken up by the time that the beds are required for the summer bedding plants. In some instances, where the summer flower garden may not be a conspicuous object from the windows of the residence, or where it may be at a considerable distance from it, or in cases where a garden is laid out in some part of the grounds for the express purpose of growing spring flowering plants and early bulbs—under such circumstances it may possibly be considered unnecessary to plant the beds of the summer flower garden with spring flowering plants, thus compelling them, as it were, to do double duty, and subjecting them to exhausting effects. It is true that much has been said and written against the so-called unsightly masses of bare earth which flower gardens generally present during the ensuing five or six months. In reality, however, there is much less in this than might at first sight appear to be the case; as, taking one season with another, during at least one-half the above-named period the surfaces of all flower beds are either frost-bound or hid from view by their winter mantle of snow, during which time it is quite immaterial as to whether they are furnished or otherwise. After all, too, there is nothing so very unsightly in neatly-formed beds of fresh soil, composing an artistically designed garden surrounded by closely-cut and well-swept green sward; but, wherever it may be intended to forego the use of winter and spring flowers in such gardens, the beds should, nevertheless, be neatly dug over as soon as the summer bedding plants are removed; the Grass should be again mowed, if at all necessary, swept, and well rolled down, and put into the best order possible for the winter; while in the soil yard, or in some other out of the way, but convenient, place, preparations should be made for collecting and preparing the necessary quantity of fertilising materials, with which to enrich the flower beds and borders for the following season. This compost may, of course, consist of various materials, such as well-rotted stable-yard or hotbed manure, well-decayed leaf soil, and, if procurable, a portion of the top spit from an old pasture, or sound maiden loam in any form, which should be well chopped up and mixed with the other ingredients, and should be frequently turned during the winter months, and applied to the beds and borders in spring, in accordance with the probable requirements of the different kinds of plants, which are intended to occupy them. This circumstance should always be kept in view, as for some varieties of bedding plants the the soil can, as a rule, hardly be rendered too rich; while for others highly enriched soil is by no means desirable, as it tends to produce an over luxuriance as regards foliage, and a corresponding paucity in flowers. Cut down the decaying flower stems of Hollyhocks and other hardy herbaceous plants, and any very choice or scarce varieties of the former, may for greater safety, and for the purpose of more rapidly increasing them, be lifted and potted. Keep lawns and walks as free as possible from falling leaves, worm casts, and other littery matter. Attend to the stock of bedding plants, giving air in abundance whenever the state of the weather will permit, and water only when it is really required.

Indoor Fruit Department.

Vines.—It may be necessary in certain cases to start a Vinery earlier than usual, but too great a change in this way should not be attempted in any one year. If a period of six weeks or two months earlier be desired, it is best to spread such advancement over two years. This may be effected by starting the Vines three weeks or a month earlier than last season, and the same amount of time earlier next year from the date of starting this season. Where two or three different houses are planted with varieties suitable for early forcing they should be made to come in in rotation. In this way the youngest Vines would be allowed a natural midsummer growth for a few years. Young Vines planted during the past summer should be pruned immediately the leaves are down. The principal pruning needed in this case consists in the cutting over of the main stem, which should be shortened to within from 2½ ft. to 3 ft. of the ground. Cut away, too, all small lateral growths which may have pushed underneath where they were stopped. Where supernumeraries are grown for early fruiting, they should be cut 6 ft. or 7 ft. from the base, which length will bear half-a-dozen nice bunches next season. Those planted last year will have made two seasons' growth by this time; consequently, they will now have to be treated for their third and fruiting year. If the wood made this season is very strong and well-ripened, it should be cut at 4 ft. further up the rafter than was directed last year; any weak shoot should be cut at 1 ft. lower down, and if generally small the whole may be cut at that length. Prune all lateral shoots from these also, and the buds on this year's growth will be found to produce strong shoots and fine bunches next year; more than 4 ft. of young wood should never be allowed to remain on any Vines which have not reached the top of the rafter, as rods so treated make a much more substantial growth thus restricted than when left longer. Vines fruiting for the first time this season should have their side shoots cut in to a couple of eyes, as formerly directed in the case of old ones. Where supernumeraries have been fruiting along with these they should be rooted out, if at all likely to overcrowd the permanent Vines next season. Very little loose bark will be found on any of these young Vines to remove before washing, and, as the borders will all have been recently made, and therefore fresh and otherwise in good condition, no top-dressing of any rich substance will be needed. A slight forking should be given to the surface, however, so that water may more readily reach the roots. . Remove decaying berries from Grapes still hanging on the Vines, an important matter, requiring an almost daily attention at this season. Black and white Lady Downes and black Alicante are the three kinds most exempt from decay, and they are the best sorts for winter supplies, either for the practical gardener or inexperienced amateur.

Pines.—The present is a very inactive time as regards Pine stove. Where much fire-heat is confined in any house, care must be taken to admit a little air when the sun strikes the house, otherwise the foliage is very liable to get scorched when the temperature rises above 80°. Crowns and any odd suckers of such precious sorts as Smooth Cayennes, Charlotte Rothschild, Prince Albert, and any other favourite kinds may yet be propagated in 5-in. pots, and plunged in a smart bottom-heat of 90°, in order that they may root quickly. The above-named varieties do not produce suckers abundantly; crowns of them are, therefore, generally potted and grown into plants, and very good plants they make, but as it is throughout the winter that the crowns of such are most plentifully obtained, a small corner, with a strong bottom-heat, should be reserved, in which to place them as they are produced. Give the plunging material a liberal watering when it shows any indication of becoming over-dry. This feeds the roots, and keeps the atmosphere in good condition.

Kitchen Garden.

Now, when the principal sowings and plantings for this season have been completed, it is a good time to determine matters respecting next year's campaign. A rough plan should be prepared of the kitchen garden, showing with what each plot of land has been planted during the past year, and indicating the rotation for the coming season. If this is well considered now, manuring and trenching operations can be carried out with a view to the requirements of each particular crop. The plan should be drawn to a scale, in order that there may be no difficulty in determining the exact position of each crop, even though removed. It is necessary not only that plenty of everything should be provided, but that there should be no waste, and there is scarcely anything that better repays a little personal supervision than the gathering of vegetables if a good supply be aimed at. If there is a good supply of manure too much stress need not be laid upon the rigid carrying out of any given rotation; still, it is desirable to avoid, as far as possible, planting the same kind of crop two years in succession on the same land. This is a question, however, which hinges very much upon the manure supply and its intelligent application. When a garden has to be heavily and constantly cropped, deep culture and heavy manuring must make up for any breach in the recognised system of rotation. As a rule, where much has been taken out of the land, much must be returned to it. All land intended for root crops next season should be manured, if it is necessary, and deeply trenched as soon as it can be conveniently done, either throwing the soil up into ridges, or at least leaving the surface as much exposed to the action of the weather as possible. The manuring and digging of fruit-tree quarters and borders will be better delayed till the leaves are down, and the trees pruned, so as to avoid incurring unnecessary labour. In warm situations, if it be desired, one or two of the earliest Peas and Beans may be sown; but, considering the risk they have to run, unless attendant circumstances are favourable, it is a question whether it would not be advisable to delay such sowings till January, especially if they can then be started under glass. However, this is a question that every one must decide for himself. Remove the surface-soil from Asparagus beds; wheel on a good heavy dressing of rich manure, and replace the dormant. Horseradish should be taken up and laid in somewhere thickly, to be always at hand and easily accessible when wanted. Provide a good supply of green Tarragon, Mint, Marjoram, &c. Peas may also be sown in boxes in heat, to provide young green tops for flavouring soups, &c.

Parsley, Endive, and Lettuce.—A plentiful supply of Parsley, which, throughout the winter is very desirable, may yet be secured, if the necessary measures be at once adopted. Weak, poorly-grown plants that have been sown in a bed or in rows, and allowed to remain crowded too closely—an error too frequently committed—can never be depended on to produce much after winter fairly sets in, and when the plants are making the least growth. Subjected to such treatment as this, the roots are often so much affected with canker that they have little vitality in them. If, at the time of sowing the crop of spring Onions, a pinch of Parsley seed was put in at intervals over a portion of the ground occupied, and afterwards thinned out to single plants, they will, at the present time, be stout and strong, probably nearly 1 ft. each in diameter. They should now be planted close together, but without crowding; the leaves of each root ought, in fact, just to meet, as in this way they can be protected. An ordinary garden frame is the best, the lights being taken off, except during severe weather, or when there is a likelihood of snow. If a frame with glazed lights cannot be spared, a temporary one made of boards should be used. It should have strips of wood nailed over it, so as to allow of mats or shutters being placed on in severe weather. In planting in this way, holes should be made that will admit of each root being placed in the soil, with its roots intact, in a spadeful of earth; and, treated in this way, they will not feel the effects of shifting. Endive and Lettuce that have already grown to a usable size should be treated in a similar way. The plants may be placed moderately close one to the other—much nearer than those of Parsley. Here, again, frames with glass lights are the best; but if they are not vacant, recourse may be had to covering with mats and dry Fern. Nothing is so good as the latter, as from its light, open nature, it may, in severe frost, be placed absolutely in contact with whatever it is required to protect; mats, on the other hand, or straw when wet, are heavy and lie so close that when frozen and touching the plants, they often do as much harm as good. A good method of blanching, and at the same time of protecting Endive, is to use boards 10 in. or 1 ft. wide, and ½ in. or ¾ in. thick, in lengths of from 6 ft. to 10 ft. or 12 ft., according to the lengths of the rows to be covered. These should be laid flat on the top of the Endive, a dry day being chosen when the plants are free from wet. Place a couple of bricks on each board to prevent their being moved by strong winds; this will also keep the boards in contact with the plants so as to exclude light, and hasten the blanching process; it will thus become white in eighteen or twenty days after the boards are put over it. More should not be covered at a time than will be used in a month or five weeks, or it may rot. The boards so placed will exclude a good deal of frost, from which the Endive can be still further protected by a covering of stable litter, Fern, or Asparagus haulm; the latter is very useful for protective purposes of this kind, as it does not lie too close.

Extracts from my Diary.

November 11.—Digging large holes and filling them with maiden loam in which to plant Peaches, Nectarines, and Apricots. Covering a bed of Seakale with leaves and manure previously prepared for it. Cutting down Asparagus stalks and clearing the weeds off the beds. Covering up Endive and Lettuce to blanch. Washing the lights and paint in the early Peach house.

Nov. 12.—Shifting herbaceous Calceolarias. Getting the trees in the early Peach house pruned and painted with the usual composition for keeping off and destroying insects. Giving Cucumbers a little earthing with new loam, adding a little charcoal to keep it open and sweet. Clearing old Raspberry canes off wire trellis. Clearing leaves and rubbish off borders in pleasure grounds and getting them forked over.

Nov. 13.—Earthing up Beans. Turning manure and leaves for hotbeds. Giving Asparagus beds a light forking, and covering them with rotten manure. Making a new Mushroom bed. Tying out the trees in early Peach house, and otherwise getting it ready for starting. Getting all Endive and Lettuce under glass as fast as room can be found for them.

Nov. 14.—Sowing Mustard and Cress. Potting on late Primulas. Getting into the potting shed a good supply of different sorts of mould. Emptying Melon pits and giving the walls a good coating of hot lime. Trenching early Pea border, turning in a good coat of manure that had been previously mixed with salt and soot. Commencing to lay down one-half of the Broccoli heads to the north, and covering up the ground between the rows with half-rotten manure.

Nov. 15.—Potting off Hydrangea cuttings which are rooted. Getting in 100 pots of French Beans. Turning manure for Mushrooms. Getting Strawberries for forcing into cold pits. Looking over Cauliflowers, turning down leaves to protect the heads where required, and moving the most forward ones into an open shed. Raking up leaves in pleasure grounds and collecting them for hotbeds.

Nov. 16.—Looking over Verbena and other cuttings, removing all dead ones and decayed leaves. Cleaning the walks in the pleasure grounds and getting them all rolled down firmly. Getting all rubbish burnt up. Clearing off late Peas, and storing away the best of the stakes. Getting for fruit trees a quantity of loam from the deer park. Cleaning up the kitchen garden walks. Fruit in use for dessert: Pines, Grapes, Pears, Apples, Medlars, Nuts, &c.—W. G. P., *Dorset.*

Dell's Black-leaved Beet.—In addition to the fine effect which this plant is capable of making in the flower garden, it is equally useful for culinary purposes. In the kitchen garden it looks well in single lines, as, for instance, behind a row of Parsley and before a row of Carrots, thus forming a good ribbon border, which, if rightly taken advantage of will make the kitchen garden more attractive than it usually is.—J. G.

Autumn-planted Cauliflowers.—I have hitherto had successful results by planting Early London and Walcheren Cauliflowers in autumn in drills from 3 in. to 4 in. deep. Put in the plants the usual width apart. Should the weather keep open before winter sets in, and the plants look over vigorous, we have them all disrooted by passing a garden trowel round them. This I find to be a much better plan than that of coddling them in frames all the winter.—J. MILLER, *Clumber.*

Scarlet Runners Late in the Year.—When we speak of Scarlet Runners existing in autumn, putting usefulness out of the question, we must draw a line somewhere, for Scarlet Runners are not nutritious or pleasant to the palate after the slightest frost; even in the south-west of England they are not good after the end of September. Therefore, to plant them in June would be a waste of seed and labour; for the plants would scarcely be in flower before frost attacked them. Even in our mild climate they should be planted in April or the beginning of May; in fact, as soon as the season permits, forming, as they do, a succession to the French Bean, of which the Canadian Runner is decidedly the best. After September we have plenty of Brussels Sprouts, Cauliflowers, Savoys, Nonpareil Cabbages, and Spinach, to say nothing of roots and Celery cooked. Therefore what need is there of French Beans?—Eugene E. Legge.

Ridging Ground in Winter.—There is no method which more effectually brings garden soil into a healthy state than laying it up in ridges during the winter season. This system possesses a two-fold advantage, inasmuch as, when the planting season arrives, it is known to be in a sweet condition; and by readily throwing off the superfluous moisture it is more easily brought into working order. On soils of a stiff, tenacious character, ridging is indispensable, but it may be safely affirmed that all kinds of soils would be much benefited thereby. If a very neat and trim appearance is indispensable, then in most cases I would prefer to merely clear the ground and let it lay untouched until the beginning of March. Freshly dug ground would appear to retain an undue amount of water, which has the effect of rendering it pasty and sour. This more especially applies to rich alluvial soils, and I have often noticed that where the surface has been left untouched, and even covered with weeds, the soil will, when dug in the spring, appear much more mellow and be in far better working order than that which has been carefully dug over. I would therefore recommend either throwing up fallow ground into rough ridges (the rougher the better), or letting it alone altogether. Simply digging I consider a mistake, and whoever desires to ensure neatness thereby must expect that he will experience a great amount of labour to bring the soil into that sweet, friable state which in vegetable culture is the very mainspring of success.—J. Cornhill, *Byfleet.*

Market Crops.—Unless the winter proves to be unusually severe there will be no lack of vegetables for general consumption, as the market gardens and fields are literally green with Cabbages, Cauliflowers, Broccoli, Brussels Sprouts, Savoys, Kales, Turnips, Spinach, and winter Onions, all luxuriant in growth. Turnips are, perhaps, not quite so abundant as last year, as the dry October kept the latest-sown breadths in check, but there is an abundance, whilst the very latest plants will pay if allowed to stand over to the spring to produce sprouts. Brussels Sprouts are exceedingly fine and an extensive crop. They need no immediate marketing, as the crop is progressive rather than simultaneous, and picking will extend over a couple of months, or even longer, if there be even a moderate amount of judgment employed in the gathering. The Sprouts also fetch a good price in the market, and the crop can be cleared off in time for early Peas, Potatoes, &c. Owing to the long continued absence of frost this autumn the Runner Bean crop was later than usual, and as long as these are pretty abundant other vegetables are less in request. Now that these are over, however, market vans may be seen heavily laden with green produce, autumn Cabbages especially; and following are immense quantities of deliciously-succulent Coleworts, one of the quickest and most profitable of all autumn greens. Autumn Cauliflowers have had an excellent time for development, but somehow they are not quite as good as usual; but they are fast disappearing, and the ground will shortly be prepared for early Peas. With all this wealth of green vegetables low prices will prevail for the growers if the winter be mild, but a hard winter would provoke scarcity and send prices up. Any such gain, however, would be but small. Should a hard winter set in fortunately the growers will have something to sell if the frost be not too grasping.—A. D.

Diseased Solanums.—The case mentioned by Mr. Inchbald (p.399) of the appearance of the Peronospora infestans on plants of one of the strong-growing ornamental Solanums used for sub-tropical planting is to me exceedingly interesting, as I have at all times given particular attention to the progress and development of this fungus in its varied forms. That the disease seen by Mr. Inchbald was identical with the Potato disease I think there can be little doubt, inasmuch as it has been equally destructive this year amongst Tomatoes, which also belong to the Solanum family, and these would seem to have succumbed in much the same way as did the Solanum in question. Had the mischief taken place more recently, it would have been easy to say that it was the result of an early frost, but there was no evidence of frost at the time mentioned, whilst it was just then that the Tomatoes were so suddenly and destructively affected. The special interest that attaches to Mr. Inchbald's communication is found, first, in the fact that the Potato disease is extending the range of its victims; and secondly, as showing that plants other than fruit or tuber producers are subject to it. It was long thought that the Potato fungus was stored with and planted with the seed tubers, and that the best remedy was to be found in steeping the tubers before planting in some strong solution. The simple fact that plants such as Potato plants raised from seed, Tomatoes from seed, and some other kinds of Solanums from seed, were alike affected, shows the incorrectness of the conclusion. On the other hand, the fact that plants having no root tubers through which to take the disease, are, nevertheless, affected, conclusively proves that the disease exists in the air, and that it is the product of atmospheric action.—A. D.

ROSES.

PROPAGATION BY LAYERS AND GRAFTING.

(Continued from page 404.)

The Layers after Separation from the Parent Stock.—This operation is effected in the usual manner by cutting off each layer close to the spot where it enters the ground. The severed shoot is transplanted at once to a pot of from 4 in. to $6\frac{1}{2}$ in. in diameter, according to the size of the plant. The double operation of cutting off and potting the rooted shoot is performed about the end of October or the beginning of November, according to the locality. As soon as it is finished the young trees are placed in the garden in a part having a favourable aspect, if possible, but in any case they must be sheltered from the sun and wind. They may be left there till the first frosts are approaching without receiving any other attention than being watered when they require it. At the approach of frost the pots must be housed in an Orangery or some similar place, or they may be laid by the heels in an inclined position, so that they may be easily covered with soil to protect them from the cold. It must not be forgotten that the Rose trees of which we are speaking are by their nature very sensitive to cold, and that the young shoots which have just been cut off from the parent stock are particularly so, seeing that their extremities, which are still tender, are gorged with sap since the beginning of the summer. Such is the operation of layering by notching the shoot. The reader already understands that it is repeated every year with each parent stool, because while the layered shoots are striking the parent stool

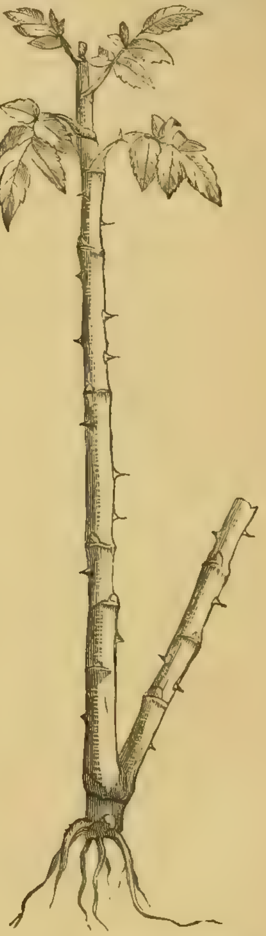


Fig. 1.—Rooted shoot after its separation from the parent stool.

is producing new shoots, which in their turn must be layered during the next year. It should also be observed that every one of the shoots should not be layered, but only those which are healthy and vigorous. Amongst the stronger shoots we often meet with some with the wood so well developed that there is danger of it breaking off short at the bent portion; in such cases it is always better to make the slit on the upper side of the shoot, and by gently twisting it bring it round with the notch to the side. The slit should be kept open by the insertion of a wooden peg. When we have to deal with a variety which has very long shoots they may be bent over so as to form a second and even a third layer, so that we may get two or three plants from the same shoot. This method is called serpentine layering, and is often practised by horticulturists for the propagation of all kinds of creeping plants.

Layering in Pots.—This method of layering differs from that already spoken of; it consists in placing pots in the trench round the parent stock, each layer being pegged down in the pot in the way already described. The pots should be 4 in. or 5 in. in diameter. This plan obviates the necessity for repotting, and the layers consequently suffer much less. Fig. 11 shows the rooted shoot after its separation from the parent stool, and fig. 12 the method of layering in pots.

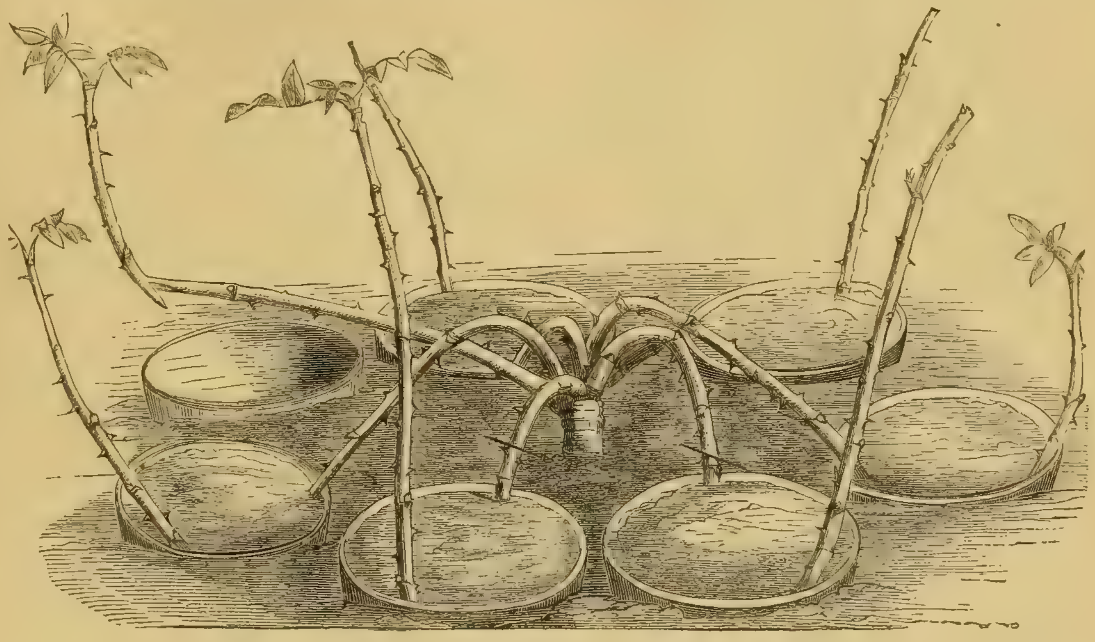


Fig. 12.—Layering in Pots.

Grafting.

Cleft-grafting.—There are two methods of cleft grafting; first, by grafting in the open air, and secondly, by forced grafting. These two methods are similar in principle, and only differ in the time of year at which they are performed. Open-air grafting is practised from March to April. In spite of the opinion of one of our most learned colleagues, we persist in thinking that a graft that is made just as the sap begins to rise has a much greater chance of succeeding than one which is made when the sap is in a state of absolute rest. One of the conditions of successful grafting is that there must be absolute contact, if not interpenetration, between the cambium of the stock and that of the graft. It seems plain, therefore, that this contact or interpenetration will take place much more easily when the approaching warm weather sets the sap in circulation. The nurserymen at Vitry, who hold to the practice of several generations, graft during flowering time, and never lose more than 10 per cent. of these grafts. On the table land of Villejuif a horticulturist grafted a number of ornamental shrubs in the month of February, but not a single one of them succeeded. Another grafted a bed containing 2000 Plum trees, but the whole of the 2000 grafts died, while most of the stocks had to be pruned down.

Forced Grafting.—This method of grafting is practised in winter while the sap would, under ordinary circumstances, be at rest. The sap of plants in propagating houses is always in motion, owing to the artificial heat which is kept up in them. The stocks for grafting on are grown in the propagating house in pots, and after having been grafted they are placed under a bell-glass in the tan of a frame, the temperature of the house being kept at from 50° to 56° Fahr., or more economically they may be placed in a frame in the open air, laid on their sides, and completely buried, the temperature of the frame being kept to 50° Fahr. by its being surrounded by stable manure. Grafts forced by either method may be planted out in the open air in March or April.

Practical Details of Grafting.—Fig. 13 shows a Brier stock cleft-grafted. *A* is the shoot called the graft or scion, and has four eyes; the top of the stock *C* is cut off slanting with a stroke of the pruning-knife at *B*; a vertical slit from $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in. is made in the stock *C*; the graft or scion is cut to a wedge-like form just under the lowest eye for the space of 4-10ths of an inch, the slope beginning at *D* at 9-10ths of an inch above the eye on the other side, the thickness at the height of the eye from $1\frac{1}{2}$ in. to 2 in. This graft being cut it is held in the left hand, while with the right we open the edges of the cleft with the top of the blade of the pruning-knife and insert the graft in the opening, taking care that the inner bark of the graft and of the stock are in close contact. The junction is bound round with thread at *E*, and the whole of the joint, the cleft, and the head of the stock is covered with grafting wax. When the subject is strong we graft two scions on the same stock. In this case the stock is cut with a small hand-saw, trimmed smooth with the pruning-knife, and, at the time of grafting, the cleft is kept open by means of a little wedge of wood, which is driven into the middle and taken out again when the scions are in their places. Grafting with two scions has the advantage of keeping up the regular division of the sap, thereby making the head of the future Rose tree more regular than it would otherwise. The freshly-grafted scions should be sheltered from the sun and wind by means of little paper caps. Cleft-grafting is used for all kinds of Roses, whether standards, half-standards, or dwarfs. By placing the latter so deeply in the soil that the graft is covered, we may form Rose trees, as it were, on their own roots. It has been asserted that standard and half-standard Rose trees, when cleft-grafted, do not last long, but we think this is unfounded, for we have seen cleft-grafted Roses fifteen years old in full vigour. Fig. 14 represents a Cabbage Rose stock bearing a scion of a Moss Rose five years old. At *A* we see the point where the scion was grafted; *B* is the stock which was only 2 ft. high at the time of grafting. The graft was made in the spring, and in the summer of the same year the tree bore such an immense number of blooms that their weight would have broken down the graft if the branches had not been kept up by a stick.

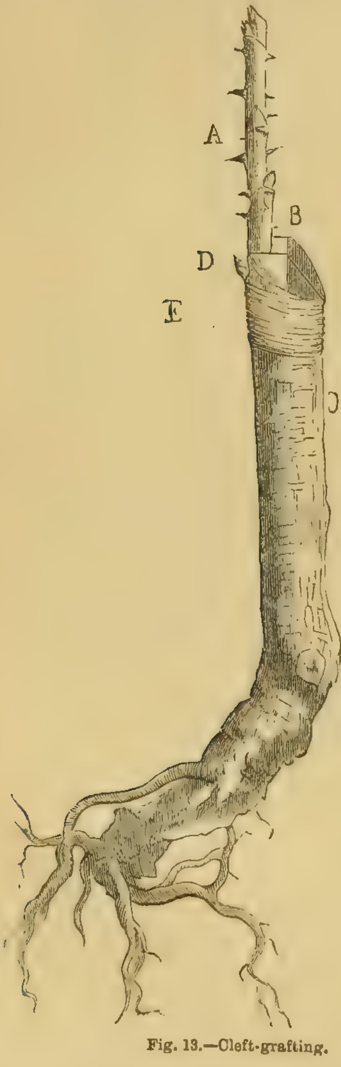


Fig. 13.—Cleft-grafting.

Choosing the Scions for Cleft-grafting.—It is of the utmost consequence for the final result that we should exercise great judgment in selecting our grafts. They ought to be healthy, mature, and properly formed, and should be cut in January or February. They are tied into little bundles, according to their varieties, and should be laid by the heels in a border at the foot of a north wall. The best part of a shoot for grafting is the first third, counting from below, then comes the second third, and lastly the upper third, which should not be used, as the wood of it is never thoroughly ripe. The most convenient thickness for the scions is from 1-6th in. to ¼ in. For thicker grafts we are obliged to use stocks of 1 in. or more in thickness, and the cleft being a wide one, the raw surfaces unite only with great difficulty, besides which there are open spaces in the inner portion of the stock, which lead to the drying up of the graft. J. Lachaume.

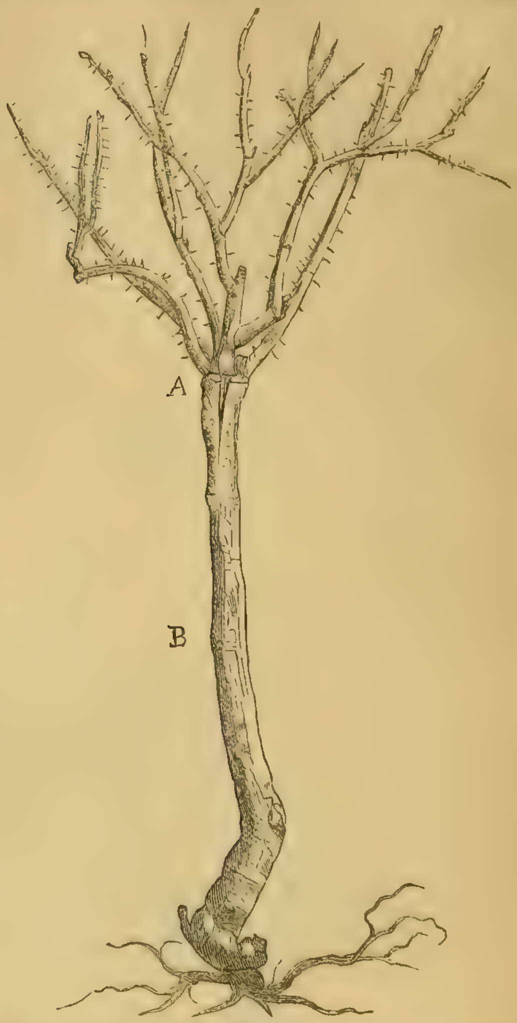


Fig. 14.—Cabbage Rose stock, grafted with a scion of a Moss Rose.

Marechal Niel Rose on the Banksian.—About fourteen months ago I budded a Maréchal Niel on a young branch of the Banksian Rose which started from the roots. The shoot from this is now 7 yds. long, and it has, moreover, thrown out eleven more, each from 6 in. to 36 in. in length. It is in a warm corner, well sheltered from the north and east winds, and we hope that it will yield us many flowers next spring.—W. H.

Perpetual Flowering Roses.—At this season of the year, while the so-called Perpetual Roses are destitute of flowers, Teas, Chinas, and Bourbons are supplying the flower basket plentifully. Growers for exhibition may rely upon sorts that attain the end which they have in view, but private growers want Roses and Rosebuds during as many months as possible, and anyone expecting to have a perpetual supply had better not rely too exclusively on the lengthy list of so-called Hybrid Perpetuals.—J. Groom.

TREES, SHRUBS, & WOODLANDS.

SEASIDE PLANTATIONS.

One of the principal difficulties with which the planter has to contend is the raising of trees upon our coasts, where, from the poverty of the soil or great exposure, or from both causes combined, his most strenuous efforts are often frustrated. Less difficulty, however, seems to be experienced upon the western than on the eastern coast; and this may be due to the fact that in the former case the air is warmed and softened by the action of the Atlantic; while in the latter the winds which assail us cross the northern part of the Continent of Europe. Thus it is found that the Myrtle and many other shrubs which stand the winter well on the west coast of Scotland, and attain a considerable size there, are cut down or dwarfed when allowed to remain unprotected through the winter upon the east coast of England, and this in much lower latitudes. Before commencing the formation of a plantation of trees very near the sea, it will be necessary to erect some mound or barrier, which shall at once break the violence of the winds and intercept the saline particles with which they are loaded. For this purpose a wall of stone or a good mound of turf and soil will be found serviceable, and in most situations the latter is to be preferred, as upon its summit may be planted the White Hawthorn (Cratægus Oxyacantha) which will soon spring up and add to the height of the lew or screen. Such a wall or mound should not be less than 6 ft. high, and wide enough to take two or three rows of Hawthorns. As soon as this is formed, open ditches should be cut to carry off all superfluous water. Immediately behind this barrier may be planted, in pits which have been thrown out some time before for the soil to meliorate, short but strong plants of Sycamore, Dutch Willow, Norway Maple, and Scotch Elm. The broad leaf and strong branches of the Sycamore and the upright habit of growth of the Dutch Willow particularly adapt them to such situations. The Norway Maple, too, is very hardy, and in its own native habitat grows close down to the sea. These may be looked upon as the standard trees, and they may be placed at distances of about 12 ft. The intermediate spaces may then be filled up with the Scotch Pine and Pinus Pinaster, or Cluster Pine. The former will flourish upon the more elevated site; and though the latter is not well adapted for high ground, still it will grow freely upon most parts of our coast. It will also succeed in a pure sand, and in close vicinity with the sea. By the aid of the nurses, the whole area should be filled up to distances of 3 ft.

In forming such plantations it is not desirable to use trees of more than from 18 in. to 2 ft. in height, which should be well furnished and strong in proportion to their height. The Pinasters may, if reared upon soil of ordinary quality, be about three years old. It should be remarked that the Sycamore and Maple do not flourish upon very poor, thin, or Mossy soils, and, if after two years' planting these and the Elms are not found to be making satisfactory progress, they should be cut off at the ground. April will be found a good time for commencing seaside plantations, as from the great exposure, autumn transplants often suffer considerably. The growth of the Pinasters may be slow at first, but after about twelve years' they will shoot up rapidly. As soon as the plants begin to crowd one another they should be at once thinned out to prevent their being drawn up and weakened. One great cause of failure is the use of tall plants placed at intervals too far apart for mutual protection. A sprinkling of Elder may be found useful, as it proves a good nurse and is very hardy.

At the commencement the planter should confine himself to the level ground, near the water, and the lower part of the slopes, and afterwards push forward his work in zones. As soon as the first belt is well established, and its progress will be in a direct proportion to its depth, he may follow up with the Beech, the Turkey and evergreen Oaks, Corsican Pines, Mountain Ash, Service Tree, the Abele and Ontario Poplars, and the Huntingdon and Bedford Willows; while as an undergrowth to thicken the front lines he may make use of the Mahonia, Gorse, Broom, Barberry, Privet, and Sea Buckthorn. The last will grow upon almost any exposure, sometimes attaining the height of 12 ft., and as its young shoots are thickly set and the shrub is armed with strong spines, it makes a formidable fence; by plashing or layering its branches it will also soon form a dense cover. Its suckers often shoot up at a considerable distance from the parent stock. The plants used should decrease in size in proportion to the elevation, and every succeeding zone should have its strongest plants immediately behind the last of the former belt. The Scotch Fir is particularly useful on account of its retaining its foliage throughout the winter. The Larch in such situations seldom proves very serviceable, unless it is planted in large masses.

The value of the Pinaster as a nurse is mainly owing to its bushy habit of growth, and its thriving on apparently barren sands. The latter property is mainly owing to its sending down a strong tap root, and being at the same time furnished with abundant lateral roots, which, in their turn, are well supplied with numerous small rootlets. Its cones hang in clusters of sometimes not less than eight, hence the name of Cluster Pine. Its bark is deeply furrowed, and the stem very rugged. Its adaptability to exposed places may be seen by its growth in Wigtonshire and upon the island of Bute, where it attains 60 ft. and upwards. It is not suited to chalky or calcareous soils. This tree is extensively used in the south of France for fixing the dunes or moving sandbanks along the coast, and especially between the estuaries of the Gironde and Adour, where there is what is locally named a littoral dune of over 120 miles in length. To stop the progress of the blowing sands the inhabitants begin by erecting a continuous line of fencing about 326 ft. from high water mark. Stout planks are put in, standing about 3 ft. 3 in. above the ground, with intervals between them, through which the sand drifts and serves as a backing. As the sandbank rises the planks are lifted up by means of levers and hooks. A rough, wattled fence is also run along behind the line of paling, and as this cannot be raised it has to be renewed from time to time. The paling is estimated to cost about 2s. per lineal yard, and the annual cost of repairs and raising 3½d. per yard. The wattled fence costs 2d. per yard. As soon as the littoral dune is formed the land immediately behind it is sown down with a mixture of Pinaster, Furze, and Broom seeds, and a layer of Brushwood or Furze is spread over the whole to keep the seeds from blowing away. A few shovels of sand fix the Brushwood. Furze for cover is preferred wherever it can be obtained, on account of its manurial value to the young crop. This light covering has to be maintained for about four years, when the plants will have risen sufficiently high to protect themselves. A strong-growing Grass (Psamma arenaria) is also sometimes sown between the plants, and the stalks of this push upwards as the sand rises. The wood of the Pinaster is extensively used in the south of France and in Spain for railway sleepers, and in its own native habitat, in warm latitudes, the Pinaster is tapped for its resin. The tree is first prepared by being exposed as much as possible to the action of the sun.

A. J. Burrows.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

The Fever Gum Tree (Eucalyptus globulus) about London.—The late Mr. Standish, of Bagshot and Ascot Nurseries, made experiments on the growth of this tree extending over a series of years. He told me that he found it was invariably killed when the temperature got below 4°Fahr., never standing more than 28° of frost. Thus its average life in the south of England would not be more than about ten years, though we have been free from such severe cold for the last sixteen years.—C. W. Dod. [The truth about the Eucalyptus has long been known to anyone who takes much notice of half-hardy trees in our gardens. This does not prevent people who have not done so writing to the "Times" and other papers, and advising its being planted about London, it being wholly unsuited for the climate. Some guilty of this might be expected to know something of the subject. This tree sometimes grows fairly well in the south of England and Ireland, but I have never seen a tree in any part of the country that seemed really healthy or vigorous, or had any of the peculiar grace that this tree and others of its family show, where the climate is really suited to them. It grows well in Southern France and Europe generally, but not nearly so well, so far as I have seen, as in California, on the plains near the coast. What other Gum trees may do in our climate remains yet to be proved. There is reason to suppose that other kinds will be more hardy. To ascertain which, if any, of the many species are hardy and suited to the climate of England, is one of the subjects that may, perhaps, be thought worthy the attention of horticultural societies, of botanists, and "scientific" horticulturists, as soon as such important questions as fungi parasitic on the stickleback have had their due share of attention.—W. R.]

Autumn Tints in Hardy Azaleas.—The beauty of the fading foliage in the case of deciduous trees has often been referred to in The Garden, but nothing has hitherto been said about deciduous Azaleas, the leaves of which are now brilliantly coloured. Here they are planted in groups on the outer edges of shrubberies and woodlands in company with Rhododendrons, and their tints are more strikingly conspicuous than those of anything else, not even excluding the Virginian Creeper, and the effect is much more persistent. Rhododendrons, I find, are already full of blossoms in various stages of expansion; some of the trusses, indeed, look more like June than October.—J. Groom.

Irish Yews when Old.—Although Irish Yews are useful where the strictest formality of growth is desirable as central objects in geometric gardens, for instance, or in scroll work laid in Box, I am by no means captivated with their appearance when left to grow unrestrictedly. The branches, which get too heavy to maintain their erect form without support, spread out when old in anything but an ornamental manner. The Irish Yew is, in fact, one of those trees that do not appear to advantage if its natural mode of growth be left unchecked, and where a pyramidal tree is desired I consider that the Cupressus funebris, or Funereal Cypress, is very superior to it in habit and less sombre in tint.—J. G.

Transplanting Large Trees.—For the last twelve months we have been moving large trees from 10 ft. to 20 ft. in height, and having heavy balls of earth. During the months of July and August we left off, and again set to work, being anxious to get the planting done before winter set in upon us. Those trees which were transplanted in June and the beginning of July look quite as well as those planted earlier in the season. We left off planting all Conifers when their growth was breaking into a shoot. Hollies and the common Yew we followed up the planting of even after they had made 6 in. of young wood, and with no bad result. We have three very useful and handy tree-lifting machines, made on purpose for our improvements. They will lift trees with care from 5 cwt. to 5 tons and upwards. With our trained staff of men we can plant six large trees in the day, besides conveying them a quarter of a mile, which I consider is a gain of twenty years or more in forming shelters and new shrubberies.—J. Miller, *Clumber.*

—— I quite agree with Mr. Gillett (p. 366) with regard to moving trees without balls; to save the roots is of far more importance than to move a mass of soil. In fact, I am of opinion that very often the ball of earth moved with so much trouble and expense secures the destruction of the tree, a circumstance which happens in this way: Newly-moved earth is more readily penetrated by water than more solid soil; the feeding roots, therefore, being all contained within the ball itself, gradually exhaust it of moisture, and, as this becomes drier and drier, any water given runs off as it would off a duck's back; and, although watering is persisted in, the tree or shrub perishes from want of it. In all cases where a tree or shrub is moved with a ball, a rim of soil should be placed upon the surface within the circumference of the ball, so as to form a sort of basin, in which all water should be poured. This ensures the soaking of the ball, which cannot be brought about in any other way.—T. Smith, *Newry.*

An Elm Tree in Kensington Gardens.—At the end of the Long Water in Kensington Gardens, on the west bank, close to the fountains, and surrounded by a seat, stands a noble and beautiful Elm. There is one of the same sort on the opposite slope, and a few years ago there stood higher up on the same slope a still finer specimen. It was blown off, and the stump which remains has sprouted with vigour. The habit of the tree is not fastigate, but branching, as the Wych Elm. The trunk, instead of being level in surface, as is the case both with the Wych and field Elm, is broken into grand buttresses by the roots, leaving great hollows between. The twigs feather nearly as lightly as the Birch, and the leaves, which are long-shaped and of a vivid green, clothe the massive limbs as thickly as the delicate twigs, giving the tree the appearance of a vast Fern. What is this tree? By the descriptions in Loudon it might be either Ulmus effusa or Ulmus viminalis. Ulmus effusa I have been unable to get—nobody cultivates Elms now; Ulmus viminalis I have only seen in nursery gardens in the shape of a miserable, chilly twig, grafted on a long naked pole of field Elm, a thing neither of use nor beauty. To obtain suckers from the trampled ground of Kensington Gardens is impossible. Can any of your readers tell me, not only what the tree is, but where I can get good specimens, not grafts, for ornamental planting? The tree evidently revels in London climate, and in Kensington Gardens they grow trees for planting out, but I have not seen among them one specimen of this glorious tree.—Bernard Coleridge, in "Gardeners' Chronicle."

GARDEN DESTROYERS.

THE GOLDEN ROSE BEETLE OR ROSE CHAFER.

(CETONIA AURATA.)

This handsome insect is one of our most beautiful British beetles, and no one can help feeling sorry when they find one nestling in a Rose to think that such a handsome beetle should be in any way injurious to our gardens; but fine feathers do not always make fine birds, and the same proverb unfortunately applies to insects, for though the damage caused by this insect to our Roses is not very great, as the beetle never appears in great numbers, still it does frequently spoil the blossoms by eating the lower and more juicy portion of the petals; and, as it flies remarkably well, is able very easily to go from one flower to another. It is also very fond of the flowers of the White Thorn, Lilac, Mountain Ash, Elder, Pæony, and Candytuft; and in the kitchen garden is often mischievous amongst the flowers of Strawberries and Turnips which are intended for seed by destroying the stamens, thus rendering the flowers unfertile. The beetle is easily seen when resting on a flower, and as it generally feigns death when disturbed it can be caught and destroyed without difficulty. It may be well to mention that all insects, grubs, snails, slugs, &c., may be killed easily and quickly by putting them into boiling water, or, which is perhaps better, by placing them in some vessel which will hold water, and then pouring boiling water over them. In either case death is almost instantaneous. The grub, which is very similar to that of the cockchafer, and is often mistaken for it, does much damage by eating the roots of various plants, amongst which the Strawberry may be particularly mentioned. Living entirely underground, as they do, the grubs are very difficult to find, but they generally make their presence known by the plants, on whose roots they are feeding, drooping and withering away without any apparent reason. Where plants are attacked in this manner search should be made at their roots as soon as they show the first signs of flagging; for they leave the plant as soon as it begins to die. Flowers of sulphur strewed on the ground and then dug in is said to be a good preventive against the attacks of the cockchafer grubs, and it would doubtless answer as well in the case of these grubs. Rooks, starlings, blackbirds, thrushes, and other birds devour them whenever they can find them. The beetle makes its first appearance in May, and in June digs a hole in some light soil in which it lays its eggs. The young grubs when hatched commence feeding upon the roots of almost any plants they meet with. They do not attain their full size for two or three years, during which time they remain underground feeding upon various roots. Curiously enough these grubs are frequently found in ant nests, and in consequence are sometimes called the king of the ants. Their connection with the ants is not at present understood. They do not seem to be molested in any way by the ants, nor to disturb them, nor do either seem to derive any benefit from the other. Curtis, in his "British Entomology," states that in Germany some cattle dealers attach supernatural powers to these grubs, and feed them in boxes, believing that if they thrive so will their cattle. When full grown they descend some depth into the ground, and form rough oval cases, about the size of Walnuts, composed of earth and covered outside with pellets of earth and their own droppings. In these chambers they change into chrysalides, appearing as perfect insects in May. The Rose beetle is about $\frac{3}{4}$ in. long, and of a very brilliant shining green colour, often with a golden or rosy tinge; on the wing cases are various spots and streaks of a yellowish-white colour. The wings are very long and powerful, but when the insect is at rest they are completely covered by the wing cases. The antennæ are short, the last three joints, which are much produced at one side, forming a club when closed, but opening

Rose Chafer (Cetonia aurata).

like a fan at the will of the insect; the legs are strong, the front pair bearing three strong spines, which enable the female to make the holes in the ground for the reception of her eggs. The grub, when fully grown, is about 1½ in. long and about 4-10ths of an inch in diameter, being somewhat thicker towards the tail; it is whitish, fat, much wrinkled, and has three pairs of reddish-brown legs, one being placed on each of the first three joints of the body, which is sparingly clothed with fine reddish hairs. The head is brownish-yellow, furnished with a strong pair of jaws. Though it very much resembles the grub of the cockchafer, it may be distinguished from the latter by its having a hard, rusty-coloured spot on either side of the first joint of the body, and by its body being covered with hairs. S. G. S.

ANSWERS TO CORRESPONDENTS.

Ants in Vineries.—We are infested with black ants, which came with a quantity of Orchids three or four years ago. This year they have got into the Vinery, and are eating the Grapes. In the early house they destroyed a good many bunches, and they are now attacking those in the late house. Boiling water is thrown down their runs every day, but it does not appear to lessen them. How can we get rid of them?—T. [I have occasionally been much troubled with these pests, more especially among ripe Peaches, and the best remedy yet tried has been the placing of moist sugar and saucers of syrup near their runs. This they have preferred to the Peaches, and whilst they were feeding off the sugar we destroyed them wholesale. Another good plan is to sprinkle about their runs fresh guano, and though apparently it does not destroy them, they soon shift their quarters.—W. W. H.]

Hypericum Coris.—I regret not being able to assist "W." in obtaining the true plant bearing this name, as I know it to exist only in one or two collections in this country, and in those in but small specimens; but probably it is procurable in some of the Continental nurseries; for instance, at Frœbel & Co., Zurich. As to the H. tenuicaule, from the Himalayas, I am very pleased to hear that the name is in gardens, as it is very rare, even in its native habitat; but if by chance it should not be true to name, and is the same species as there is in quantity at Chiswick, it is no desideratum with me; however, I should very much like to see it when "W." has it in flower. H. virginicum, I fear, has quite disappeared from English gardens, and for some unaccountable reason it has not been re-introduced in quantity.—W.

Forcing the Canadian Wonder Bean.—"J. G." (p. 397) may obtain this Bean in quantity by forcing it in pots like any other variety, and supporting it well with stakes before the length of the stem or weight of the crop bears the stems down.—Cambrian.

—— I have for three years generally sown about two-thirds of this variety, and the other part of Osborn's Forcing, which is a good Bean, but not nearly so large and hardly so prolific as the Canadian Wonder. The latter has one drawback: in May and June it grows much too strongly, and consequently does not show much flower; therefore, at that particular season I always grow Osborn's Forcing.—A. Hossack, *Ragley, Alcester.*

Fruit Trees on Walls.—Oblige me by some instruction as to the treatment of a few wall trees in a suburban garden. The aspect is on three sides—south, west, and north; the soil, stiff clay. This latter has been rather deeply dug out, and good mould and stable manure substituted. Is anything else desirable in the way of guano or other artificial appliances? The trees consist of Peaches, Apricots, Nectarines, Cherries, Plums, and Pears, the last on the north wall.—C. E. S., *Willesden.* [Pruning and training the shoots are all that is necessary until midsummer, when a good mulching of manure may be placed over the roots. This being done, guano or other artificial manures will be unnecessary. As regards pruning and the general treatment of fruit trees, exhaustive articles have been frequently given in The Garden, and the weekly calendar always contains information on the subject.—S.]

Asparagus Beds.—Can you furnish me with instructions for making a new bed? I have directed the making of two beds in my lifetime, the last about fifteen years ago, but I gather that there are improved methods now extant. The depths and distances of the plants I particularly desire.—An Elderly Amateur. [The ground should, in the first place, be bastard trenched; a depth of 24 in. of soil will be sufficient if well enriched with good stable manure, decayed turf, and a liberal sprinkling of crushed bones in each trench. Our method of bastard trenching, which we prefer to bringing the poor subsoil to the surface, is, to commence with a trench 2 ft. wide, taken out to a depth of 12 in., and wheeled to the end of the ground to fill in the last trench, the manure being first placed on the ground in heaps at convenient distances apart. In the bottom of the first trench the workmen put in a good coat of manure and dig it well down, sprinkling more manure on the fresh-turned soil before the top spit from the second trench is put on it. After removing the top spit from the second trench, the loose soil left by the spade comes to the surface of the first trench; this method brings the middle soil to the surface, the surface soil to the middle, and the subsoil remains at the bottom, having been well broken up and enriched with manure. Towards the end of March or beginning of April the ground will have subsided and be ready for planting. The Asparagus may be planted in shallow trenches if intended to be grown on the French system, or on the surface if it be grown in the usual way, simply spreading out the roots, and covering them with 5 in. of light, rich soil; place each plant 2¼ ft. apart in the row, the rows being 4 ft. asunder; good strong one-year-old plants may be planted as soon as they have started into growth 2 in. or 3 in. long, planting those which have the strongest shoots and discarding those with weak ones. At the commencement of the third year after planting (provided the plants have grown well) some Asparagus may be cut, but the cutting must not be severe, and ought to cease early if a strong and permanent bed be desired. A full supply should not be cut until it is four years planted. We use one-year-old plants, and wait until the commencement of the fourth season before cutting. A good dressing of manure in the autumn applied to the crowns of the plants, with a sprinkling of salt in the latter part of March, and the same of nitrate of soda a month later, which may be repeated again in May, gives the best results.—W. Allan, *Gunton Park, Norwich*.]

Large Specimen of Pinus insignis.—Allow me to inform "P." (p. 366) that there was a fine specimen of Pinus insignis at Castle Lesley, Co. Monaghan. It was killed in one night during the severe frost of 1866. It was allowed to remain for a considerable period in hopes of recovery, but without success. Smaller specimens were also killed at the same time.—P.

Grafting Hollies.—Is this a good time of the year for performing this operation? I have heard that Rhododendrons do well grafted in autumn, and so probably I have thought would Hollies.—M. C. D., *Tralee.* [If the stocks are established in pots, Hollies will do well grafted in autumn if protected in frames. April and May are the best months for grafting Hollies in the open ground.—E. F.]

Red-berried Elder (p. 363).—In Peebles-shire the Red-berried Elder when in fruit forms quite a striking plant. I have seen it at Darn Hall (Lord Elibank's, between 550 ft. and 600 ft. above the sea), Portmore (Mr. Mackenzie's, 700 ft.), Dalwick (Sir J. Nasmyth's), and at Stobo Castle (Sir Graham Montgomery's). These two last places are close to the Tweed, and 600 ft. above the sea level. I can only compare the look of the bushes to that of Pyrus japonica in full flower. Along the coast here this Elder always flowers and sets its fruit, but in many seasons the berries drop when only half-coloured, and the bunches have never the luxuriant look of those on the Peebles-shire trees, which also are very superior, on account of their freshness and freedom from dust, to the fruit which I have happened to see on the Continent. I may be wrong, but my belief is, that, in order to appear in its true character and perfection, this shrub, like many other plants, depends more on altitude than on either soil or exposure. I should add that the Elder grows most luxuriantly in marshy ground, a fact exemplified by the burnside at Dalwick, and by the pond at Portmore. I am told that both sheep and rabbits injure Elders.—F. J. Hope, *Wardie Lodge, Edinburgh.*

Orchard-house Vines.—I have a lean-to Vinery 24 ft. by 12 ft. wide. Instead of planting the Vines to cover the roof I wish to plant them in rows to upright stakes. How far should the rows be apart, 4 ft. or 5 ft.? I propose planting them 4 ft. and 3 ft. apart in the rows, to cross at the top to the next stake, so as to form an arch. If I plant them 4 ft. apart in the rows I shall only then have three rows, but at 3 ft. four rows. But perhaps 3 ft. will be too close. Also, will you kindly say which is the best Muscat Grape to plant in a Vinery not to be heated—Muscat Hamburgh grafted on the Hamburgh, or the Madresfield Court Muscat, or Cannon Hall Muscat? and will the White Frontignan do?—Vine [Four ft. apart will not be too much between the rows, and 3 ft. between the plants in the rows would do. If the rows run from the back of the house to the front you will, of course, have the longest stakes at the back, diminishing them in height in accordance with the slope of the roof down to the front. Madresfield Court would be better than Muscat Hamburgh, but it is not a Muscat. Black and Early White Frontignan would do; also, Black Hamburgh, Mrs. Pince's Black Muscat, Black Prince, Royal Muscadine, and Graham's Muscat Muscadine.—S.]

Sparaxis and Crocosmia.—I have lately bought some bulbs of Sparaxis, but cannot find any directions for cultivating them. Will you kindly help me in this matter? I have also some bulbs of Crocosmia aurea. As these bloom in autumn, I presume they should not be planted until spring. As I am desirous to place my plants in the border according to their relative height, perhaps you will be good enough to name the height to which Sparaxis usually grow. It is stated by some that they grow 2 ft.; by others that they are more dwarf in growth than Ixias.—E. H., *Tavistock.* [Good directions for the culture of these are given in Messrs. Barr & Sugden's catalogue, from which we extract the following: For indoors—Plant from September to December five or six bulbs in a 5-in. pot, using a compost of turfy loam, leaf soil, and silver sand. Make the soil firm about the bulbs, then place the pots in a cold pit or frame, plunging them in ashes, and withhold water till the plants appear, then give sparingly at first. The lights should be left off except during wet or frosty weather. Early in February, if the plants are sufficiently advanced, remove them to the greenhouse, or where there is a very gentle warmth, and place the pots on a shelf close to the glass, and attend to the plants with water till they are in bloom. For outdoors—Choose, if possible, a light loamy soil, thoroughly drained, and with a due south aspect; if backed by a wall or greenhouse all the better. Plant the bulbs from September to January, at a depth of from 3 in. to 4 in. and from 1 in. to 3 in. apart. As the early plantings make foliage during the autumn, it is necessary to give protection during severe frost, and this may be best accomplished by hooping the beds over and covering when necessary with mats; or if tiffany is used it may be allowed to remain till all danger from severe frost has ceased. The plantings made in December and January require no protection in winter, but as they will flower later in the summer than the early plantings, an aspect should be selected where the sun's rays will be somewhat broken; attention to this will prolong the blooming period. On stiff soil, or soils which are rather wet in winter, the beds should be raised, and the bulbs surrounded with sand, taking care that they are planted an inch or two above the level of the path, and where protection cannot conveniently be given, planting should not be done till December or January. Some of our late-planted bulbs were this year in flower in August. Our finest effect, however, was from beds which had been two years planted, and protected simply with straw mats such as the Dutch use for their frames in winter. On one occasion we made up a temporary pit against an old shed, placed 1 ft. of good soil in it, and protected during the winter with shutters, and we had a fine display of flowers. These directions are applicable to other Cape bulbs, such as Ixias, Tritonias, and Babianas, besides Sparaxis. The latter attains a height of about 1 ft. Crocosmia aurea grows about 3 ft, and should remain out of the ground till spring]

Mushroom Culture.—Will some fortunate grower of Mushrooms kindly inform me how to grow them? do they require heat? what is the best manure for them? and how can one destroy woodlice which eat up the spawn as soon as it begins to spread? should the bed be watered frequently?—E. [Provided that the materials are at command, nothing can be simpler than Mushroom culture. The best and most lasting material is two-thirds horse droppings and one-third of light loam. The manure should be had fresh from the stable, be thrown together to heat, and the soil spread over and intermixed with it. Turn it over each day for a week to allow the obnoxious gases to escape, and the soil to get thoroughly incorporated with it. At the end of that time it may be formed into a bed, which should be as firm as possible by treading or beating as the work proceeds, and it should be at least 2 ft. in depth. Bottom-heat thermometers or test sticks should now be put into the manure, and when the heat has declined to 75° the bed may be spawned by dibbling into it, 2 in. deep and 9 in. apart, pieces of spawn the size of a bantam's egg; then beat down the surface and cover the whole with good light loam to a depth of 2 in. If however, there be any danger of the bed re-heating above the 75° named, the soiling had better be deferred till that danger is past. The bed should now be covered up with a thin layer of straw or long litter, over which lay mats; and no watering will be requisite till the Mushrooms make their appearance. Provided the temperature of the house does not go lower than 45°, fire-heat should not be applied; should it get lower than that, employ slight fires, and neutralise their drying effect by occasionally damping the floors and walls. To prevent the depredations of woodlice, procure a couple of toads and encourage them to stay in their lodgings by furnishing them with a saucer of water at which they can drink. Under the above treatment Mushrooms should make their appearance in about six weeks; and if the weather be bright and drying, water may be required, but, as a rule, unless the bed seems very dry, it is best not to water till the Mushrooms appear. An arid atmosphere and over-watering of the beds are fatal errors in Mushroom culture.—W. W.]

Cherry Plum as a Hedge Plant.—Can you give me any information about this Plum (Myrobella), which is advertised as a good hedge plant? Does it answer well for that purpose? and will it grow under timber?—J. S. [That which makes the Myrobella Plum especially valuable as a hedge plant is the vigour with which it grows in all kinds of soil, even in the poorest and most exhausted, its hard, unyielding wood, its long, sharp spines, and its great hardiness and non-liability to disease. It grows fairly well under trees, but, of course, not so well as in more open positions. It comes into leaf much earlier in spring, and retains its foliage much later in the autumn than White Thorn. At the present time (Nov. 5) it is as green as White Thorn in June. Not a leaf as yet shows any symptoms of decay, although we have had some severe frosts. This adds greatly to its value for ornamental purposes. It may be treated, in planting fences, in all respects like White Thorn, except that it is not necessary to plant it quite so closely; from four to six plants per yard are sufficient for ordinary purposes. If a strong fence be required very quickly the plants should not be cut at all during the summer. They should be shortened to about one-third of their height at planting time, and each succeeding winter, or time when they are devoid of leaves, they should be shortened to within about 9 in. of the height to which they were cut the previous season till the height which it is desired that the fence should ultimately attain is reached. It may then either be clipped in the ordinary way as appearances require, or the superfluous shoots may be trimmed off every winter. This Plum is also valuable as an ornamental shrub or small tree, and as a stock for the Apricot and Plum it is invaluable, succeeding so well as it does on poor soils.—J. E. EWING, *Norwich*.]

Methods of Preparing Green Corn for the Table.—Allow we to inform "Derwent" (p. 275) that we do not use the common field Corn, from which meal is made, but a variety called Sweet Corn, which is more succulent, sweeter, and of better flavour. The best varieties are the Early Minnesota, Early Concord, and Late Evergreen, and by planting at intervals, Corn may be had for the table until early frosts set in. Sweet Corn is ready for use when in the milky state. If, on pressing the thumbnail upon a grain, it yields readily and the milky juice flows, it is in the right condition for use. Now take the ears, strip off the husk, pick off the silky, adhering filaments, boil the ears about thirty minutes, and serve hot; eat with a little salt and butter. It is not considered improper to eat Corn from the ear, taking the end of the cob in the fingers, or it may be cut off on the plate. Sometimes the ears are roasted before a fire and served in the same way. Another way is to take a knife and cut the Corn from the cob. Cook it in a saucepan, with a very little water, about twenty minutes; then add a little butter, salt, and milk, and cook for ten minutes longer. A third plan consists in taking Lima Beans when fresh and tender, cook them about half-an-hour, and then add an equal measurement of Corn cut from the cob, as directed in the previous receipt; boil the whole twenty minutes more, and season with salt and butter. This is called Succotash, and it is said to have originated with the Indians in New England. A fourth method, which is considered to be very satisfactory, is to take the ears of Corn, and with a sharp knife cut a thin slice from the tips of the grains; then with a dull knife scrape the Corn from the cob in a pulpy mass. It will probably take a dozen ears of Corn to furnish sufficient for the purpose. Add half a pint rich, sweet cream and a little salt; put it in a shallow pan over the fire, stir often, lest it adhere to the bottom of the vessel, and cook for about twenty minutes. Sweet milk and butter may be used instead of cream if more convenient. Any one who uses American Sweet Corn in any one of these ways, during a single season, will hardly be willing to be without that luxury afterwards.—C. H. S., *Niles, Alameda Co., California, U.S.A.*

White Azaleas in the Open Air.—Did you ever know the white Azalea being grown in this country out in the open garden? A friend of ours says that he has seen "hedges of them in England," and we doubt this fact. [The white Azalea thrives well out-of-doors in various parts of the southern counties both of England and Ireland.—V.]

Eradicating Bindweed.—How can I eradicate Bindweed, which grows very thickly in my garden?—O. S. W. [If as many of the roots as can be found are removed, and the land afterwards planted with crops which will admit of the easy and frequent use of the hoe between them, you will master the Bindweeds in time, as they will die from want of that support which foliage alone can supply. But hoeing must be done well and often.—S.]

Erodium pelargoniflorum.—Allow me to inform Mr. J. Sisley that the specific name of this Erodium should have been as here written, and not pelargonifolium (p. 368). As to the adaptability of its name, it should be observed that its flowers resemble those of a Pelargonium (notably those of P. bicolor) more so than the majority of Erodiums, which usually are regular and nearly circular in outline; hence I consider it as being very aptly named.—W.

Names of Plants.—*J. R.*—Dendrobium palpebræ or bicolor. *A. H.*—Viburnum Opulus.

Aralia Sieboldi.—This is just coming into flower with me in the open air. Is not this rather unusual?—J. K., *Eastcott Cottage, Pinner.*

Scottish Horticultural Association (Nov. 5).—Mr. C. S. France read a paper on this occasion on "Ornamental Planting." Kent, he said, in the beginning of the last century was among the first to lay down principles for the guidance of the planter for landscape effect. He also spoke of the proper distribution of trees, and referred to the particular schools of landscape planting and their various peculiarities. The principle underlying the styles of different nations was found in the outward features of each country. The primary rule to follow by all planters for effect was to imitate Nature. To have unbroken plantations and at other points vistas so as to make the ground appear as large as possible was an important principle to be borne in mind by all who plant to improve the beauty of the landscape. Mr. Alex. Mackenzie read a paper on "Early-flowering Pelargoniums." He described the mode of propagation from cuttings and from roots which he adopts in the Warriston Nursery, and explained the treatment followed by him in every particular, from the cutting-pot to the flowering specimen plant. He put in his cuttings principally from March to November, but the operation for the most part might be performed all the year round. The temperature, airing, and staking were explained. The result of Mr. Mackenzie's culture of this plant was that he had a houseful of them in excellent health bearing a profusion of bloom for twelve or thirteen months, a result which he could not produce with any other plant. The principal sorts in his collection were the following: Madame Toulegeon, Digby Grand, Mdme. Lemoine, Triomphe de St. Maude, Bridal Bouquet, Annie, Fire King, Mrs. Bradshaw, Magnet or Marchioness of Lothian, grande, floribundum, and Red Gauntlet. Mr. James Gordon also read a paper on the "Osmunda regalis" in its native habitat at Camstradden, where acres of this much-prized Fern were to be found. He stated the different conditions under which it luxuriated on the banks of Loch Lomond, the fronds attaining the height of 6 ft. Messrs. Dickson & Co. exhibited flowers of the Schizostylis coccinea from the open air; also blooms of Veronica speciosa and Violas Golden Gem and Lilacina. Messrs. Todd & Co. showed flowers of the crimson East Lothian Stock. Mr. Henry Kintoul sent blooms of Vallota purpurea in great beauty at this season. Mr. George Donaldson, sent a new seedling late Kidney Potato, which was highly commended by the new Vegetables Committee.

Potatoes at the Paris Exhibition.—In reply to Messrs. Carter & Co.'s correction (p. 402) I have to say that when I inspected the collections of Potatoes no awards had been announced, but no one acquainted with Potatoes could overlook the fact that Mr. Porter's exhibits in the classes of twelve and twenty-five dishes were a long way ahead of Messrs. Carter's in the same classes. Of course, the blending of the entire collection in one would easily give Messrs. Carter the victory; but, surely, this was not in accordance with the schedule, which distinctly names the three classes.—W. W. H.

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> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

THE FLOWER GARDEN.

AN "ALPINE GARDEN" IN VIENNA.

NOTWITHSTANDING the healthy change witnessed in our gardens in recent years, it is so seldom that one meets with an interesting collection of Alpine plants on a rock garden presenting any fresh points of interest, that it is desirable to notice such when they are met with.

In an obscure corner of the Belvedere Gardens at Vienna there is an Alpine garden meriting attention. By the way, why is it that an Alpine garden is considered by amateur landscape gardeners and others as only fit for obscure corners? Because hitherto the attempts in this direction have been, as a rule, nearly always ridiculous—a good reason for their usual site. But a properly formed rock garden would be an object to charm the eye in many an open position, and the more open and exposed the better. It does not follow from this that it should be placed in the middle of a level lawn; but neither should it be an object to place in the shade of trees or hid by a hedge, or hid away in any obscure corner, or protected by a piece of canvas on rollers. This Vienna garden is in a nook surrounded by walls, and the surroundings "take away" from the well-formed rock garden, where a great number of rare plants are extremely well grown, and not a few Tyrolese and Balkan plants which are seldom or never seen in our gardens. The general principle in making the garden has been to secure a series of compartments of various sizes with the view of growing a species in each—in fact, the "pocket" system so much and so well used by Mr. McNab in the Edinburgh Botanic Garden. But this system of compartments, instead of being square, as is mostly the case at Edinburgh, is carried out in an irregular and more natural way, so to say, and is so far an improvement; for it need hardly be said that the variety in form and in wants of Alpine plants allow of great variety and naturalness being followed in forming homes for them, so to say. In fact, it is quite easy to do all that is required without allowing the square form to obtrude itself, and any kind of formal receptable must prove detrimental to the effect of the Alpine garden. In addition to these divisions here, there are level and sloping portions in imitation of "moraines," on which, as is well known, numbers of Alpine flowers grow as well as on the rocky portions, or far better. This system might be carried out with advantage to a much larger extent; as what the plants want, as a rule, is a deep, firm rooting-ground, and not always to be transfixed on or against rocks or stones. These are often more serviceable in preventing evaporation and securing drainage and a deep, not over rich, medium for the roots below ground than above it. Many rare species, some of which are spoken of in notes in THE GARDEN, grow on these little "moraines" and among the rocks in this garden. But the most novel point in the culture of Alpine plants illustrated here was the establishment of various kinds on the face of rugged stones; that is to say, a variety of species grew from small interstices, cracks, and holes in the stones themselves. This is a most important advance in the culture of Alpine flowers, because it secures a greater vitality in the plants, though this is accompanied by a much diminished growth; a Saxifrage or an Androsace rooted in the face of a rock or stone, and with no soil but what its roots can trace out in interstices, which cannot, perhaps, be entered by a penknife, must necessarily be smaller than the same species grown in the "moraine," but it is none the less beautiful. In fact, to many these brilliant flowering plants reduced in such positions to the size of Mosses have a peculiar charm; and, as mankind exposed to hardships and scant rations are usually less in need of the doctor than those who fare sumptuously every day, so these Alpine plants, living almost on the air, have the endurance, the longevity, and the fecundity of the "oppressed." And although the great majority of Alpine flowers thrive perfectly in rocky or gritty soil, there are some species which one never sees in a good state, except on the face of arid rocks. Phyteuma comosum, for example, on the face of the vertical rocks about Lecco, is one of the most beautiful objects seen by those who seek Alpine flowers in their native places. One plant, however, of all others that grow one would least expect to be treated in this way is so grown here, and that is the well-known Campanula pyramidalis, which well grown in gardens is often 5 ft. high. But in some of its native localities, at all events, it grows on rocks without soil, and in imitation thereof some seeds were sown in little crevices here, and they gave rise to a group of plants which are almost amusing in their gouty deformity at 2 in. and 3 in. high after several years' growth.

Growers of Alpine flowers know too well the ravages of slugs among them. They are probably not equally alive to the destructive doings of various grubs among them. Here whenever a withered patch is seen among the Saxifrages or Androsaces, a grub of Pachyrhina imperialis is found below it. Among other rare and curious plants growing here was a small shrubby Viola delphinantha, of Mount Athos, said to be beautiful in flower.

TRITONIA AUREA OUT-DOORS AND UNDER GLASS.

HAVING lately seen several inquiries about Tritonia aurea (now often called in catalogues Crocosmia aurea), I send a few notes on the treatment and habits of this handsome and curious autumn-flowering bulb. Few bulbs are more easily managed, or more easily lost by mismanagement, than this. The bulbs should be bought as soon as they can be got, and should be out of the ground as short a time as possible. They may be planted 3 in. or 4 in. deep, in pots or boxes, in any soil, a mixture of sandy peat and light, fibrous loam suiting them best. They may be placed anywhere out of the reach of frost, but the less they grow during winter the better. They must, however, be watered at once, and the soil must never be allowed to get dry. This is the most important point in their treatment. They succeed well as border plants in any soil except clay, but seem to like moist beds of peat soil best; they may be planted out in April or May. I have had the shoots killed to the ground by frost in May without injury to the bulb, though of course the growth was weakened and retarded. Treated as a cold frame bulb, and planted out, they will flower in the south in August, but in the north of England a month later, and in cold places it is better to bring them on for a longer time under glass and plant them out later, or to treat them altogether as greenhouse bulbs, for which they are well suited. Though tolerably hardy, there are two objections, besides the lateness of their flowering, to leaving them out all winter in the open ground—one, that they are liable to be killed in severe winters unless well protected with litter; the other, that owing to their habit of straying, in which they much resemble Lilies of the Valley, they are apt to leave the place in which they were planted, and come up where they are not wanted. It is better, therefore, to lift the whole stock in autumn; and as they may, if necessary, be potted many together, and separated when planting-out time comes, this takes little trouble or room. I lift mine about the beginning of November. This must be done carefully; for, although the tops are not yet dead, the shoots which form the new bulbs next year are already several inches long, sometimes even more than 1 ft. These shoots are jointed suckers, not unlike those of Triticum repens (Couch Grass), and as soon as they have completed their horizontal growth, the nucleus of a new bulb is formed on the last joint. This young bulb then makes roots, and sends a shoot perpendicularly upwards to become the flowering stalk of next year. I have not ascertained the exact time at which the parent bulb ceases to be necessary or useful to its offspring, but I believe it to be soon after the young shoot appears above ground. The sucker connecting the new bulb with the old gradually dries up into a hard, wiry thread. When the bulbs are lifted in November for replanting, if sufficient care be taken, the last year's bulbs will be found—to outward appearance, alive and sound, like the old corms of Gladioli—connected with the new bulbs by these threads. If the shoots of the bulb have once been made, and been broken off, or allowed to dry up, no treatment will make it produce another shoot. I am at a loss to discover any external test by which these old bulbs can be distinguished from the new ones before the shoots are formed on the latter, unless the flower-stalk is left adhering to it. Having often found a proportion of the imported bulbs barren, I cannot help suspecting that the old bulbs are often mixed with and sold as new bulbs. But to proceed with the treatment of the bulbs when lifted: The old bulbs can now readily be distinguished by having no stalks or shoots, and may be pulled off and thrown away. It will be understood after what has been written above that anything like drying off or storing the roots in a dry place is fatal. They had better not be left uncovered for a single day. When the suckers dry up they die, and the bulb, though continuing sound in appearance, dies with them. Care must also be taken in potting to keep the long suckers at the same depth as the bulb, turning them round the inside of the pot, for if the points are brought above ground before they have completed their horizontal growth and commenced the formation of a bulb, the suckers die. When planted they must be carefully and repeatedly watered. The shoots on appearing above ground will probably all be found to touch the edge of the pot; hence, if you can spare say a 4½-in. pot for every two or three bulbs, they are in the most convenient condition for planting out again with a ball of soil when the time comes. A few years ago I lost my whole stock of Tritonia aurea, because my gardener, contrary to instructions, kept them without water during my Christmas holidays. Tritonia aurea when grown as a greenhouse plant is liable to wither just before flowering, the leaves becoming brown and drying up prematurely without any apparent cause. I suspect that this is due to deficiency of moisture at some period of their growth, but I want further information about it. The average annual increase of Tritonia aurea is about two and a half. I do not know how our neighbours who supply the market contrive to ripen the bulbs before the young shoots start, as in my garden these always start before the flowers are over. C. W. Dod.

Eton.

ARUM LILIES (CALLAS) OUT-OF-DOORS IN WATER.

Mr. Hinds' remarks on growing Callas in trenches remind me of a system which I once adopted of growing this plant as an aquatic in the open air. When well grown, this Arum is a grand plant whether in flower or not, its fine leathery leaves giving it a truly tropical appearance, but as generally grown it gets drawn or leggy, and, except when placed amongst other plants, it is not always what would be called a good habited plant. It is truly noble when grown in groups or masses, a condition, however, in which it is seldom or never seen. To accomplish this the following plan may be adopted: This Arum is well known to be half-hardy and semi-aquatic; therefore, select some sheltered nook on the lawn for it; if near a shrubbery in a recess, so much the better. Towards the middle of May collect your plants, twelve, twenty, or thirty, as the case may be, go to the brewhouse and procure one of those large, shallow vessels, known as coolers. These are either round or oval, and would hold, according to size, from twelve to thirty of the plants. Carry the cooler to the spot selected, and place it in such a position as when filled with plants it would appear to the best advantage. When *in situ*, mark out on the Grass the space occupied by the cooler, remove it, and then remove the soil from the inside of the marked space to such a depth that when the vessel is placed in it its rim shall be about 6 in. below the surface; clear all your excavated material away. Group your plants in the cooler as you would arrange a bed of shrubs, the strongest and tallest being in the centre; fill the cooler so that the pots may stand in about half their depths in water. If the cooler should be old and leaky puddle it outside with clay. Procure some thin strips of wood (stout wire will do as well), and introduce them between the plants tolerably close together, crossing them if necessary; tack down these strips to the edge of the extemporised tank. The plants will now appear to be growing in water through a trellis. Procure a quantity of Moss, in as large pieces as possible; lay this evenly on the wire or strips of wood all over among the plants, bringing it out so that it may appear part of the natural turf. You will now have a group of Arums growing in water, but apparently growing out of the turf, and the proximity of the Moss to the water will keep it always fresh and green. Plants thus treated will present a grandeur rarely seen when grown in the usual way, and it is highly probable that treated in this manner in many localities they would survive the winter. Thos. Williams.

Ormskirk.

NOTES ON BEDDING PLANTS.

There has been such an increase amongst plants suitable for bedding purposes during these last few years, that some remarks on what have done well here this season may help those who intend trying new varieties. Amongst Pelargoniums, Deuil de la Lorraine is a very fine scarlet, becoming darker towards the centre; in form it is perfect, and good in habit. A. F. Barron, scarlet, is also excellent in habit, and will probably supersede Vesuvius with us. Comte de Gomez is very similar to the preceding, and well worth a place in the most select collections. Louis Veuilott, scarlet, shaded with purple, is pleasing in colour and its habit is good, but it is rather difficult to winter, and ought to be potted singly. Rosy Morn, a soft, rose-shaded purple, forms a good companion to the last-named variety. Vesuvius, one of the best of scarlets, flowered well, but its trusses with us were small. These have been our best scarlets. In the pink section, Edith proved to be one of the best; it is a kind which throws its flowers well up above the foliage, and which produces large trusses that stand rain well. It has, moreover, none of the seedy look which Christine used to assume late in the season. Lady Emily, a much deeper pink, has flowers perfect in form, and its growth is much dwarfer than that of Edith; altogether, it is a very promising variety. Amaranth, purplish-pink, is good early in the season, but rain is ruinous to it, especially if the nights be foggy still, in this variety we have a shade of colour which is most desirable. La Vestale bears very good pure white flowers, and is a more upright grower than others of the section to which it belongs. It is preferable to Mdme. Vaucher. Amongst Calceolarias, amplexicaulis is the best yellow for large beds, and it has been exceptionally good this season, flowering continuously. Aurea floribunda is very good, but rain greatly injures it. Prince of Orange has done well with us, and flowered for a long time. Sparkler is a distinct variety, with a good habit; and Ambassador is the best dark kind, and one which has been very attractive. Verbena venosa has been so good this season, that in comparison with it Purple King has looked weedy. The plants were raised from seed sown in January. Crimson King has been very good. White Perfection made too much growth, but flowered well. Ageratum mexicanum, still the best of its section for a large bed, has flowered abundantly. Of edging plants, Pelargonium Willsi roseum, L'Elegante, and König Albert have been very good. Alyssum variegatum, Gnaphalium lanatum, Viola cornuta Perfection, and Perilla nankinensis have all been good. Zinnias have been really grand, and Phlox Drummondi has proved itself to be one of the best and most continuous flowering annuals for mixed beds. Our principal flower beds take, on an average, about 1400 plants each, and when in full beauty they are, as may be imagined, very attractive; all contained self-coloured plants with an edging of double rows. A. Hossack.

Ragley, Alcester.

LILY GROWING.

Mr. C. W. Dod (p. 393) says: "I confess I am puzzled by much that 'Dunedin' writes." How can it be otherwise? Mr. Dod is apparently a believer in the perennial theory, that is, he believes, with Mr. Baker, "that the same bulb goes on living for an indefinite period, sending out each year a flower stem from its centre." So widespread is the belief in this theory, that some Lily growers have attempted to prove its correctness by experimental investigation, but the result has been complete failure. I write in accordance with the system which experimental facts have placed before my eyes, namely, "that the bulb that has bloomed once will never bloom again, and that the parent bulb dies each year after having bloomed." No wonder, then, that some things that I write should puzzle Mr. Dod. He says: "Does he ('Dunedin') mean to say that the stem roots are of no service to the growth and development of the flower stem?" I have said nothing of the kind. I have said that the stem roots are a fruitful source of injury to the successional bulbs, and that some (not knowing this) actually encourage them by top-dressing and heaping up the soil around the lower part of the stem. I have said this, and more on the subject (p. 371), and I have added that the cultivator who can recommend such a thing to be done could not give worse advice. Lilium candidum, or the White Lily, has no tendency to throw out stem roots; and yet, when it is properly cultivated, we have not a more stately or a more free-blooming Lily among the whole tribe. Mr. Dod asks: "If the stem roots are of no service to the growth, what do they feed?" I tell him, if he desires to cultivate offsets at the expense of the successional, or next year's blooming bulbs, by all means let him encourage the growth of stem roots, but not otherwise. Mr. Dod also says: "I cannot agree (with 'Dunedin') that a large Lily bulb is no better than a small one." I did not say so. I said (p. 352): "I would never think of choosing a large bulb because it was a large one. I would sooner have a medium-sized bulb of a certain character." He then says: "If to obtain a single flower stem is the object, I grant that he ('Dunedin') may be right, but experience shows me that a large Lily bulb, if planted in a healthy condition, will produce three or four stems, and if lifted next year will have divided into three or four bulbs; a small bulb will produce one stem, and will have grown at the same time into one larger bulb. In this way we gain a year's growth by buying a large bulb." Now, in all this Mr. Dod is entirely mistaken, his experience having led him astray through his misdirected views. In the first place, a large Lily bulb will not produce more than one stem, unless Nature had assigned to it, twelve months before, the office of liberating two or more germs or seed-buds emanating from the same source. Further, if Nature had done this, it would not have been the bulbs from which the stems had sprung that would be divided into three or four, but it would be their successors (or successional bulbs) that would have been growing up within the parent bulbs at the time they were blooming. Further still, a small flowering bulb is just as likely to produce twin bulbs or triplets (two or three stems) as a large one; but a small blooming bulb will never grow into a larger bulb, for Nature has ordained that after blooming, whatever its size may be, that bulb must die. In saying that he gains a year's growth by buying a large bulb, Mr. Dod is simply deceiving himself and, possibly, others. Mr. Dod further says: "I am at a loss to know how the reproduction of Lily bulbs, on which 'Dunedin' lays so much stress, differs in its main facts from the reproduction of all other bulbs." As true Lily bulbs stand distinctly apart from all other bulbs, and as I have already said so much on this part of the subject in former papers, I shall, at present, confine myself to a few general remarks on points of some importance to Lily growers, and from which Mr. Dod himself may possibly learn something.

In some of my previous papers I have shown that the very best time for transplanting Lilies both in pots and in the open ground is when the bloom is just over. At this time the flowers of the parent bulb have faded, the roots of the parent bulb are dead, and the scales of the bulb itself are dead or dying, though they may not disappear entirely for some months to come. The new bulb and its roots are, therefore, now the only objects we have to care for; and in caring for them we should not overlook the fact that they are in this country under artificial cultivation; that they are not under the protection or the climatic and atmospheric influences of their native habitats; and that leaving the bulbs in the ground for several years in this country without being attended to is not cultivation. The roots do not grow like the stem, but are lengthened by what is termed cell-multiplication, that is, the parts once formed scarcely if at all elongate afterwards, as the growth takes place continuously at the tips alone; or in other words, the root grows in length by continued additions of new fabric to its lower extremity, elongating from that part only, or chiefly so that the tip of a growing root always consists of the most newly-formed and active tissue. If a bulb of L. auratum be planted in congenial soil, it will prolong its roots to a great depth, and these roots will branch out into numerous rootlets, and these rootlets will be covered with innumerable root-hairs which increase to a great extent the absorbing surface, especially if the soil be deep, free, and friable. Hence the danger of disturbing active roots, for the newer the root and the more numerous the fibres the more actively does it absorb nourishment from the soil. Previous to the plant beginning to bloom there are two sets of bottom roots distinctly visible, namely, the roots of the bulb about to bloom, and the young roots of the new or successional bulb destined to bloom next season; both taken, unfortunately, by a great many Lily growers to be one and the same set. The new bulb at this time is provided with all its organs, though not full grown, that is, it has not yet attained its full bulk. At this time the young roots are only about 2 in. or 3 in. long, but they go on lengthening, with less or more activity, during the winter months (if not disturbed), drawing nourishment from the soil and storing it up in the cells of the bulb, where it is elaborated into organic or nourishing matter, the bulb enlarging and becoming more fleshy as this nourishment accumulates. Mr. Dod asks: What do the stem roots feed? It would have been more to the point if he had asked: What do the bulbs feed? He might also have asked: What is the organised fabric of the plant? and how is its growth effected? The stem, leaves, and flowers appear to ordinary inspection to be formed of smaller parts, which are themselves capable of division into still smaller portions. Of what are these composed? To obtain an answer we examine, by the aid of a microscope, thin slices or sections of any part of the bulb. A magnified view will present on the cross section the appearance of a network, the meshes of which divide the whole space into more or less regular cavities. In whatever direction the sections are made the cavities are seen to be equally circumscribed, although the outlines may vary in shape. Hence we arrive at the conclusion that the fabric consists of a multitude of separate cavities with closed partitions, forming a structure not unlike a honeycomb. These cavities are the cells, and they form in the scales of the bulb what we may call the store rooms, full of sap, and so infinitesimally minute are these cells that it has been calculated that in a fresh, healthy, medium-sized bulb of L. auratum there are not less than 300,000,000 of them! By cutting across a scale in spring when full of sap, and placing it under the microscope, it will be seen that the cells are of a somewhat polygonal form, leaving no spaces between them, save that which is occupied by the walls of the cells, these being composed of what is termed cellular tissue. If the same experiment be tried after the bloom is over it will be found that the cells, which were full of nourishing sap in the spring, are now completely emptied of their contents and dying, thus verifying what I have often said, namely, "that the bulb that has bloomed once, will never bloom again, and that the parent bulb dies each year after having bloomed." Dunedin.

TRANSPLANTING LILIES.

In what has been written within the last year or two upon the natural growth and cultural requirements of Lilies, there have been several matters adduced previously well known to all observant cultivators of these plants, but still well worth the circulation they have had, inasmuch as they are facts that cannot be too much impressed upon those who know little of the nature of these plants, and who, without care or through ignorance, treat them and other deciduous bulbs much in the way in which they would deciduous or evergreen fibrous-rooted plants, and yet wonder why they do not succeed. The decay of the old bulbs and formation of new ones internally is nothing more or less than what takes place in all bulbous-rooted subjects. In the case of all the scale-formed ones Nature effects her work much in the same manner—that is, a greater or less gradual throwing off and decay of the outer portion. That any one could have disputed this is simply an evidence of how little attention is frequently paid to the natural economy of vegetable life. In what has been adduced, theory and practice kept for a time pretty well abreast—a very desirable consummation. But "Dunedin's" recent teaching has the misfortune of neither according with theory nor practice. If I understand him correctly, he would have us believe that the right time to move Lilies, such as L. speciosum and L. auratum, is whilst the leaves are yet fresh and green. Now, I will deal with the theory first, looking at it upon the broad principle as affecting plant life generally of a nature such as these bulbs are that do not form so much as a single leaf more than is necessary to keep up the reciprocal action or natural balance that is required between the roots and the leaves. If you do anything to any plant of these, or such as are of a like nature, that shortens the duration or hastens the decay of the leaves before their allotted time, you inevitably weaken the plants. So certain and universally admitted is this that it seems unnecessary to mention it. Bearing directly upon these Lilies, I may mention that some years ago whilst three or four large pots of L. speciosum with their flowers half expanded were being carried on a hand-barrow to one of the houses, the barrow gave way and the pots were broken, the balls of earth being more or less broken also. Having plenty to take their places, and as there were too many bulbs to keep longer together, I at once divided them, doing it as carefully and with as little disturbance of the roots as I could. The remaining flowers opened, but the leaves died much sooner than those of the rest of the stock not moved, and the effects were apparent for two years afterwards in the much fewer flowers which they bore, notwithstanding the increased room which the bulbs had in their new pots. Once or twice after this, when both this kind and L. auratum were moved at a similar stage of growth to the extent of a single pot or two, in each case I found that they were much weaker the year following. I have not grown nearly all the Lilies now in cultivation, nor have I any desire to do so, as a good many now cultivated have little to recommend them except it be to exemplify their worthlessness as compared with the best; therefore, I am not in a position to speak of the treatment under which all succeed, but with all I ever grew, so far as removal went, they were treated uniformly in regard to carrying out the operation as soon as ever the leaves had decayed and fallen off naturally, and I may say that thus treated I have had L. speciosum that has produced from twenty to twenty-five flowers on a single stem, and L. auratum with thirty-seven fully-developed blooms on one stem, and these not the small blossoms one often meets with in a fasciated state. I am always willing to learn, and when I see better results, than the above, traceable either to removal before the leaves had ripened off, or any other course of treatment, I shall be most ready to acknowledge the superiority of the system of cultivation followed. T. BAINES.

FUCHSIAS ON BOTTOM-HEAT OUT-OF-DOORS.

I HAVE grown Fuchsias well for some years in the open air against a south wall in front of a pit which runs parallel to another. The boiler being sunk 6 ft. below the ground at one end of the front pit, which is shorter than the other, and the hot-water pipes crossing to the back pit in a brick chamber about 2 ft. below the walk, I took out a good-sized trench about 2 ft. deep and 3 ft. wide, and at the bottom laid a 4-in. tile drain right and left of the hot-water pipe chamber the whole length of the pit, and rising to the surface at each end. The drain tiles were covered with rubble and filled up with a good, rich mixture of light loam, leaf mould, &c. The hot-water chamber opening into the stoke-hole, a continual circulation of warm air goes on, and in cold weather the steam may be plainly seen rising from the end pipes when uncovered, the covering being a small piece of slate laid on, to prevent the heat from escaping and being wasted. Under such conditions the Fuchsias grow so rapidly as to afford an abundant supply of flowers until cut down by a sharp frost. They are as yet uninjured, although Dahlias, French Beans, &c., were destroyed on the morning of the 3rd inst.; sometimes the Fuchsias escape, while in other winters they are killed to the ground, but the border having become sunk and been made up, their roots are now too deep to be ever killed by frost. Some of this year's shoots of Madame Cornellissen are fully 5 ft. long, and it is one of the most showy varieties with which I am acquainted. The drooping kinds are not so good for open-air culture. I have many sorts, but one of the very best is Rose of Castile, as it is so very self-supporting, being an erect grower. I have cut spikes of it 18 in. long, which are excellent for cutting and furnishing large vases. I always plant out my old plants in some sheltered place in well-prepared ground, light and rich, and they thrive beautifully. We have a bed of standard Roses at Sprydoncote with an undergrowth of Fuchsias, now in its third year, and the Roses being past the Fuchsias have for some time been quite a "sight." A little bottom-heat for plants of a half-hardy character is a great advantage.

Killerton, Exeter. JOHN GARLAND.

Stem Roots of Lilies.—Having read with surprise the statement of "Dunedin" (p. 371) as to the prejudicial influence of stem roots on Lily bulbs, I have turned out some plants of L. auratum which I had planted in boxes, and I find that on the stems of some of them there is a mass of roots, that certainly equal in weight the bulb, which they, from their mop-like growth, so admirably protect; in fact, a better thatch to shield the bulb could hardly be devised, and I must certainly think that "Dunedin's" views on this point are erroneous. The bulbs were large, imported ones, planted early in spring in boxes 15 in. deep, filled two-thirds with strong garden soil; the bulbs were then carefully planted, covered with sand, and the boxes were filled up with nearly pure leaf-mould. They grew and blossomed exceedingly well, and at very different dates. The stems are dying down very slowly indeed, a circumstance which I attribute to the fact that, as the leaf-mould sunk, I kept adding fresh quantities and watering well. Some of the blooms I fertilised from one very strongly marked bloom, and the pods of seed are still ripening on the stem. How "Dunedin" would increase his Lilies when he does not allow them to seed, and scrapes the stem in addition, I do not know, as I have often found good bulbs formed on the base of the stem; and with greenhouse treatment I think that L. auratum would increase as much as the common white does in the open air. Some plants of L. Szovitzianum under the same treatment have not done well.—LONDON STONE.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

The Virginian Creeper Scrambling over Holly and other Shrubs.—The effect of allowing this beautiful creeper to ramble in this way is rich and striking. At a distance it looks as if the shrubs were clothed with glowing red fruit of enormous size. Looked through the rays of the setting sun, nothing can be more rich and beautiful; the leaves seem aglow with crimson and gold, as if the rays of sunlight were passed through as well as reflected from them. As these plants seem to do little or no injury to the shrubs, they ought to be more frequently mixed among them and allowed to ramble at will for effect. They are far more beautiful thus than against walls. The colours may be equally or more brilliant on the latter, but the free growth and drooping branchlets give a grace and elegance unattainable on walls. I had written thus far when I noticed your remarks about the masses of Virginian Creeper in the gardens near the Palace of Schönbrunn. No doubt such masses as those described are magnificent; but climbing up trees, or running at will over shrubs, this Virginian Creeper perhaps reaches its highest possible beauty. Home plantations, as well as shrubberies, might often be draped with this charming plant. Its chief fault is the fugitive character of its brilliant colouring; hardly does it reach its best than the leaves begin to fall, but as a free, rambling plant, the Virginian Creeper is interesting and beautiful at all stages of its growth. The ample size and verdant colour of its leaves, the drooping beauty of its shoots, and the interesting character of its clinging stems and tendrils, have been too much lost sight of while impatiently waiting for the fiery colour which heralds the fall of its leaves.—D. T. FISH.

A Few Good Autumn Border Plants:—

Anemone japonica
,, alba
Asclepias tuberosa
Aster longifolius formosus
Chelone barbata
,, Foxi
Chrysocoma Linosyris
Eryngium bromeliæfolium
Helianthus multiflorus fl.-pl.
Hypericum calycinum
,, patulum
Œnothera macrocarpa
,, taraxacifolia
,, Lamarckiana
Pascalia glauca
Rudbeckia speciosa
Sedum Ewersi
Sedum ibericum
,, spectabile
,, kamtschaticum
Senecio pulcher
Stevia ovata
Tritoma Uvaria
,, grandis
Veronica corymbosa
Zephyranthes candida

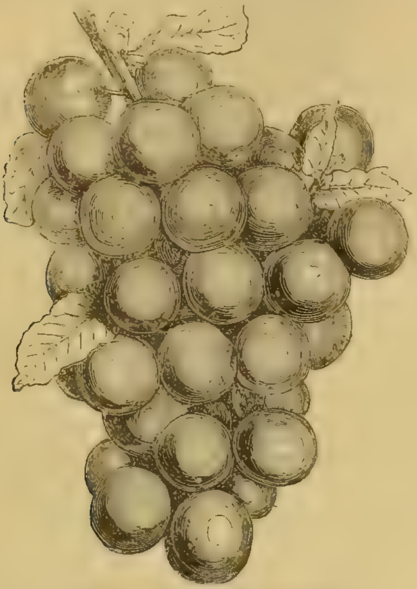
J. G.

Alpine Flowers.—Hermann Muller writes to "Nature" to say that in the Alps he has found some instances of different forms of flowers in plants of the same species, which, as far as he knows, have been hitherto undescribed, of which he gives a short notice as follows: Pelargonium sylvaticum is in one locality near the Albula Pass gynodiœcious, with large-flowered hermaphrodite, and small-flowered female stems Veratrum album, Dryas octopetala, and Geum reptans are in all the localities where he has examined them androdiœcious. Astrantia minor offers a quite peculiar sort of androdiœcium, some stems bearing, as in other umbellifera, in the same umbel hermaphrodite flowers and male ones, other stems producing solely male flowers. Dianthus superbus seems at first sight to exist in three forms: (1) Stems with hermaphrodite flowers, being perfectly proterandrous and producing a moderate quantity of whitish pollen; (2) stems with female flowers containing very conspicuous rudiments of stamens, but pollenless anthers; (3) stems with pistils remaining imperfectly developed, and with anthers containing abundance of a brown powder. At first sight M. Muller thought their flowers to be male, and the brown powder to be pollen grains; but under the microscope the latter proved to consist of grains, the diameter of which is only about one-eighth of that of the pollen grains of the hermaphrodite flowers. He supposes, therefore, these grains to be the spores of some species of fungus, and Dianthus superbus to be gynodiœcious.

THE FRUIT GARDEN.

A PROLIFIC BULLACE.

A few weeks ago, Mr. Harwood, of Colchester, sent us examples of a kind of Bullace which is grown to a considerable extent in that part of Essex. Its fruiting properties are remarkable, shoots 6 in. or a little more in length being so loaded with fruit as to represent clusters of Black Grapes rather than Plums, and, indeed, a little way off they were undistinguishable from bunches of Black Hamburgh with berries a little larger than usual. Being so fruitful, the trees make little wood, and on that account seldom get beyond the size of small, bushy pyramids. When fully ripe the fruit is of good flavour, and excellent for culinary purposes.



A Prolific Bullace (half natural size).

CRANBERRY CULTURE IN ENGLAND.

There is no fruit so acceptable at this season for tarts as Cranberries, yet how seldom do we see them grown, a circumstance which may arise from a mistaken notion that they are difficult to cultivate, or from an idea that building tanks in which to grow them is expensive. The finest Cranberry beds in the kingdom, perhaps, are at Ashburnham, in Sussex; yet their construction is most simple. They were formerly fish stews, originally about 12 ft. wide; some Oak stakes 3 in. square were driven into the ground 2 ft. from the side, and on these were nailed 1-in. Oak boards to the depth of 16 in. The bottoms of the beds were formed of brick-bats, in order to allow the water free access to the roots. The best soil for Cranberries is peat and leaf mould with a good supply of sand; rough peat ought to be put over the bricks to keep the soil from getting amongst them. During the early stages of growth Cranberries require flooding, but more especially should this be done when they are coming into flower; the water should never be allowed to get below the side board. These beds were so arranged that the water from one pipe served the whole by allowing it to pass from one to the other, there being only a Grass walk of 6 ft. wide intervening. It is astonishing how long Cranberries will keep on bearing without any additional outlay. Some of these beds which I renewed had been fifty years under constant cropping, and Cranberries are very profitable, realising readily 5s. per gallon. Those who contemplate forming beds ought first to consider where a good supply of water can be had from; then, selecting a light airy position, but still not too exposed, have a bed of the required width excavated to the depth of 5 ft., and puddled with clay sufficiently to hold water; secure a waste pipe, say 3 in. below the top of the bed; when you require the water higher this may be easily done by placing some clay around the pipe to the required height. It is most essential not to allow the water to become stagnant. Do not plant too thickly, because for a few years they grow rapidly, and if crowded do not bear freely. The variety most suitable to grow is the American Cranberry (Oxycoccus macrocarpus). Several of our nurserymen offer plants for sale, or they may be had direct from America by the barrel at a very reasonable price.

Ragley. A. Hossack.

PEARS FOR NORTHERN DISTRICTS.

The recommendation (p. 380) of such Pears as Duchesse d'Angoulême and Beurré Rance, &c., for planting in the "north of England generally," has surprised more readers of The Garden than "S. D." (p. 419). Nearly one-half of the number recommended are, to say the least, exceedingly doubtful sorts for northern districts, let alone recommending them specially for the purpose, while I doubt if any cultivator at all familiar with Pears would think of recommending the Duchesse and Beurré Rance, except for south walls. Both will fruit, but the fruit is unfit to eat and only good for some cooking purposes. Both are delicious Pears when well ripened, but even on south walls they do not always attain high quality in the north. We are using Duchesse Pears here now that have been ripened on a south wall, thanks to the six weeks of fine, warm weather which we had about midsummer, but the quality is by no means first-rate. On the other hand, the sorts recommended by "S. D." are, in the main, trustworthy for northern districts, particularly Williams' Bon Chrétien, Louise Bonne, Marie Louise, General Todleben, and Beurré d'Amanlis. The last is not sufficiently known as a hardy sort. It ripens on pyramids here in the open ground, and is a fine-looking and deliciously-flavoured Pear. The tree is also a strong grower, but not very prolific. Though good with us, considering our climate and situation, it appears to attain a far greater degree of perfection in the south, as regards size and appearance at least. I was very much struck with its appearance at the Paris Fruit Exhibition on the 16th of August last, where it was shown in fine condition and of a size and colour such as I never saw it possess before. It was the finest Pear in the show. As to the Chaumontel, also recommended for northern districts, I do not think I ever saw a really good example of it anywhere in the north. The samples which come to market are all from Jersey, where, I am told, it is grown very extensively, as it fetches a good price in the English markets. That some of the more tender sorts of Pears come to tolerable perfection in a few exceptionally favoured localities in the north of England, and even in the Lothians of Scotland, I do not doubt, but recommending such for general culture is another thing. As fine fruit-growing districts are to be found in Lancashire and Yorkshire as anywhere in the north of England, especially near the coast, on the east and west respectively, but in both counties there are also large tracts where only the hardiest Apples and Pears are worth planting, while nowhere does one find the finer sorts such as we have been speaking of grown extensively or recommended. Beurré Clairgeau is a very hardy sort and fruits freely in cold districts on the Quince, and the fruit is large and fine in appearance, but it is worse than third-rate in flavour, for which reason I threw several trees of it away here. It is not worth growing as a dessert Pear. J. S. W.

—— With regard to the remarks of "S. D." (p. 419) respecting the selection of Apples and Pears for northern districts, I have to state that the omission of Williams' Bon Chrétien from the list (p. 380) was a mistake. It is an indispensable variety in this neighbourhood, and cannot be too highly recommended. I thought from the opening remarks of "S. D." that my list was to be annihilated altogether, but I am glad to find that we agree as to some varieties. As to some of the sorts condemned by "S. D.," the following are their positions: Passe Colmar, west wall; Easter Beurré, laden to the ground with large, handsome-shaped fruits, standard; Ne Plus Meuris, standard; Beurré Rance, standard; and perhaps it may further surprise your correspondent to hear that Gansel's Bergamot does well as an espalier. If "S. D." be in our neighbourhood at the forthcoming horticultural gathering at Liverpool I will be pleased to show him not only the trees but their produce also. W. Hinds.

Pearson's Golden Queen Grape.—We have a two-year-old cane of this Vine bearing some very fine bunches, and, taking all its merits into consideration, I think it is not only the best new Grape that has been introduced for many years, but one of the finest white Grapes in cultivation. In growth it is free and robust, the bunches handsome in shape and size, and the berries fine in colour and excellent in flavour.—Cambrian.

THE INDOOR GARDEN.

CHRYSANTHEMUMS AT ISLEWORTH.

Seldom have we seen the Chrysanthemum represented (in exhibition style) in such perfection as we saw it the other day in Mr. Levesley's nursery, Isleworth. Beginning with the Pompones, we found some dozens of plants growing in cold frames or in low houses close to the glass. Though necessarily trained somewhat formally for exhibition, these plants are much more natural-looking than those generally found at Chrysanthemum shows. They were struck from cuttings in February last and potted on into 8-in. pots, in which they are now flowering. Stopping the shoots was practised four times. When the cuttings had made about 9 in. of growth, the lower 6 in. were stripped of leaves, in order to form clean stems. This stopping resulted in the plants making four strong shoots, which were trained downwards over stout Hazel sticks bent in an arch-like manner over the plant and fastened to a wire ring placed on a level with the bottom of the pot. As the shoots proceeded downwards, they were again stopped at intervals, which resulted in the plants forming complete mounds of fine, strong, healthy shoots and large, dark green, leathery foliage; and at the present time they are literally covered with well-formed blossoms unusually bright in colour. Measuring from the surface of the soil, the plants are about 9 in. high, and in diameter from 4 ft. to 4½ ft. The pots are raised on other inverted pots, which are completely hidden by the plants. The chief features of these Chrysanthemums are their fine form, size, health, and profusion of bloom. Unlike most Chrysanthemums grown for exhibition, these have not been disbudded to such an extent as is generally practised; hence, instead of one flower on a shoot, they have from four to five quite as large and good in every way as single blooms. The kinds consist of the best known old varieties and several well-tried new ones, the aim being to grow the best and those with flowers of the most distinct colours. Among the most noticeable now in bloom may be mentioned Fanny, rich magenta, one of the best dark-flowered kinds in cultivation; Figaro, a scarce sort, with large Anemone-centred flowers of a rich golden-bronze colour, very striking; Antonius, yellow, a hybrid, Anemone-flowered sort; excellent plants of the lilac and yellow-flowered varieties of Cedo Nulli; Andromeda, creamy-white, edged with carmine; Prince Victor (new), dark crimson, a free bloomer and useful for purposes of exhibition. White Trevenna is also a fine grower and capable of being trained to any form. Though old, it is still perhaps the best white Pompone in cultivation. For bouquets its blossoms are invaluable, and small plants of it are excellent for window decoration. Princess Meletia is a fine new kind, not yet distributed; its flowers are of good size and of snowy whiteness, the petals being beautifully fimbriated or feathery. Ernest Benary, a new kind, having pink violet-shaded flowers, is represented by a finely-developed specimen, as is also the well-known kind called Bob, a variety very seldom seen in such good condition as it is here. A noticeable feature in these plants is that not a stake is used in them, excepting two or three bent across the pot, as before stated, by which to support the wire, and to form a foundation on which to build the superstructure, and yet they are as perfect in form as could be desired. Standard plants, grown in 8-in. pots, are also remarkable examples of good culture, whilst in form they are somewhat different from those usually seen. The plants themselves, including pots, are about 6 ft. in height, 2 ft. of the stem at the bottom consisting of clean wood, whilst the head, which is 3 ft. through, is tied in the form of a modified pyramid. No stakes or wires are used beyond one stake to keep the plants steady. Chrysanthemums thus managed are literally masses of blossoms, and for furnishing the conservatory are, perhaps, the best kind of plant that could be employed. Although no roots are allowed to go through the bottoms of the pots, the plants are one and all well furnished with large leaves down to the bottom. The kinds chiefly grown as standards are Mdlle. Marthe, white; St. Michael's, bright gold-yellow; White Trevenna, and a new unnamed kind with bright mauve-coloured flowers. Large-flowered kinds are represented by dwarf, healthy-looking, naturally-grown specimens, each furnished with upwards of 100 perfectly-formed blossoms, and amongst them may be found such kinds as White Empress of India; the yellow and bronze varieties of Jardin des Plantes; Mr. George Glenny, a rich cream-coloured kind; Mrs. George Rundle and Mrs. Dixon. Altogether, the plants, which number over 100 fine specimens, are among the best examples of Chrysanthemum culture we have hitherto seen, and such results are attributed in no slight degree to the use of Clay's artificial manure, which has a good reputation among growers of plants for market. The plants will be in flower for some weeks yet to come, and are well worth a visit. S.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Dracæna Frederici.—This is one of the best of the recently-raised coloured-leaved Dracænas. It has a compact, yet graceful, habit of growth. It can be grown into large plants in very small pots. Its leaves assume a rich rosy-crimson colour, and, altogether, it is one of the best plants for table or vase decoration with which I am acquainted.—S.

Echeveria De Smetiana.—This is a great improvement on E. secunda glauca, of which it is evidently a variety. Its leaves being close together, form a compact rosette of a bright, silvery character, which is enhanced by a narrow edge of rose round the fully-developed leaves. Where a dry place in the conservatory can be secured, this Echeveria would form a neat and lively edging during winter, and in spring the plants would be available for carpet gardening.—S. C.

New Hybrid Begonias.—By crossing varieties of Begonia Rex and B. discolor, a new race of Begonias has been obtained in Messrs. Henderson's nursery. The plants are intermediate in foliage, whilst the flowers are like those of B. discolor. For room decoration, as well as for other purposes, these Begonias will be found invaluable.

Geonoma gracilis.—The true form of this Palm is equal in gracefulness and beauty to the much-esteemed Cocos Weddelliana; indeed, by many it is considered superior, on account of its pinnæ being a little broader and of a fresher green colour than those of the Cocos in question. We lately saw neat little plants of it in Messrs. Hooper & Co.'s nursery, Twickenham.

A Good Table Plant.—One of the most graceful, as well as easily cultivated, plants which can be employed for table decoration in winter is Beaucarnea recurvifolia (Pincenectitia tuberculata) grown by Messrs. Hooper & Co. Plants of it in 6-in. pots are placed out-of-doors in summer, and brought into a cool greenhouse in winter, where they throw up heads of gracefully recurved, narrow, green and bronze leaves, and, being of a hardy character, they withstand the heat and dust of rooms, as well as a little rough usage, without being seriously injured.—C. W. S.

Begonia Roezli.—This valuable Mexican species has seeded freely this year for the first time with Herr Ernest Benary at Erfurt, and should prove a useful plant for winter blooming. The flower buds appear about the end of October, and resemble those of an opening Pæony. They are enveloped in a dark red spathe, and rapidly expand into a beautiful umbel of large size, composed of luminous, deep red flowers. In a temperate house the plants of this fine species bloom freely in uninterrupted succession until March, a fact which speaks at once for its great value for conservatory decoration. The flowers being firmly attached to the pedicels, will be found of great utility for bouquets.—G.

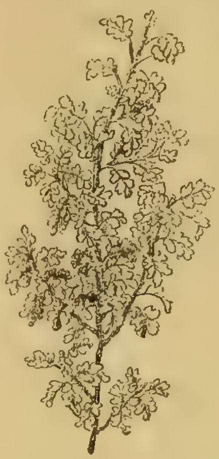
Warm Treatment of Bouvardias Best.—Bouvardias, like many other plants, can be flowered in different temperatures. Twenty-five years ago I had two of the then species in cultivation, and grew them, as was at that time customary, in a warm greenhouse. At the time required (through the winter) they produced a fair quantity of flowers from the shoots formed in the autumn, but, owing to the absence of more heat, when the first crop of bloom was cut, they made slow progress in the formation of fresh growth and the production of more flowers. As soon as I commenced to grow them in stove-heat, similar to the treatment which the best of the London market growers give them, I found that in the course of the winter I could cut from a given number of plants three times the quantity of flowers that it was possible to do under the cool treatment. These Bouvardias admit of "cut and come again" to an extent possible with very few plants. Every bit of fresh growth which they make produces flowers when well managed, but the growth must be in existence, or the bloom will not be forthcoming. It was for this reason, and after fully testing both the cool and warm treatment, that I recommended their being treated as stove subjects through the winter.—T. Baines.

TREES, SHRUBS, & WOODLANDS.

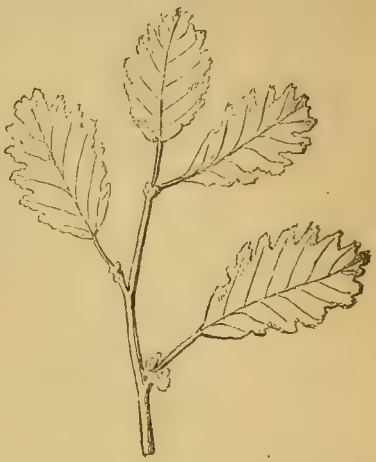
THE ALDERS.

Fringing the banks of the rivers and brooks, and growing in marshes throughout the whole of Europe, Asia northward from the Himalayas, and North America, as well as on the Chilian Andes, the Alders are often the most frequent of trees, and contribute in no slight degree to the beauty of the landscape. According to the ideas of the individual botanist as regards specific rank, the genus contains from about fifteen to more than double that number of species, many of them furnishing well-marked varieties, and most of them being known in cultivation. A glance at the woodcuts illustrating this paper will show how wide are the differences in form and size of leaf exhibited by many of them. The habit, too, varies considerably, some of the kinds never getting to be more than bushes, others often attaining a height of 70 ft. or 80 ft.; indeed, under different circumstances the same sort will often run through all the intermediates between a small bush and a large tree, as, for instance, our native Alder, which, on high hills, does not reach a quarter the height it attains in the richer soil of the more sheltered valleys. In some places this is largely grown to produce charcoal for the manufacture of gunpowder. The timber is soft and of no great value, but it is extremely durable when buried under ground or immersed in water. In Holland it is extensively used for forming piles, and its adaptability for this purpose has been acknowledged from a very early period, Pliny calling it "eternal." According to Vitruvius, the city of Ravenna was built upon it, and Evelyn states that the celebrated bridge of the Rialto at Venice was built on Alder piles. About a century and a half ago enormous numbers of plants were imported from Holland to Scotland at a considerable price and planted in large tracts of moist land. Boutcher, who records the fact, informs us, however, that no returns suitable to the labour and expense incurred were received. The common Alder does not seem to have been regarded with much favour by many writers as an ornamental tree, although it is one of the finest of aquatic trees; indeed, Gilpin places it, after the Weeping Willow, as the most picturesque of all. With Gilpin, Sir Thomas Dick Lauder fully agrees. He says, "It is always associated in our minds with river scenery, both of that tranquil description which is most frequently to be met with in the vales of England, and with that of a wilder and more stirring character, which is to be found among the glens and ravines of Scotland. In very many instances we have seen it put on so much of the bold, resolute character of the Oak, that it might have been mistaken for that tree but for the depth of its green hue. The river Mole may, doubtless, furnish the traveller with very beautiful specimens of the Alder, as it may also furnish an example of that species of quiet English scenery we have alluded to, but we venture to assert that nowhere will the tree be found in greater perfection than on the banks of the river Findhorn and its tributary streams, where scenery of the most romantic description everywhere occurs." An advantage the tree undoubtedly possesses over many deciduous ones, which affect drier situations, is its tendency to retain its foliage after they have shed theirs. There is, however, a great deal of difference in this respect among the numerous species and varieties, several of the varieties of the common Alder being in good foliage after that of the type has fallen. Although in a state of Nature, most of the Alders are found where their roots can obtain at all times an abundant supply of moisture (and under such conditions they reach their fullest degree of development) they will grow well in all but the lightest and driest soils. I believe that all the species known already in cultivation fruit freely in this country, and can be most readily propagated by means of seeds. The numerous, very strange, and ornamental varieties require to be reproduced by layers—a very easy process—or propagated by grafts, using the common Alder or other vigorous kinds as stocks.

Alnus glutinosa.



Alnus glutinosa var. oxyacanthæfolia.



Alnus glutinosa var. quercifolia.

Common Alder (Alnus glutinosa) has a wide geographical range, being found wild throughout Europe, North Africa, West and North Asia to Japan. It has black bark and rounded, somewhat wedge-shaped leaves, wavy and serrulate at the margins, and deep green both above and below; these, when young, are, as well as the young shoots, covered with a glutinous substance, whence the specific name.

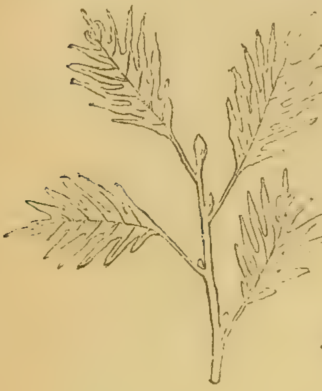
Alnus glutinosa rubronervia.

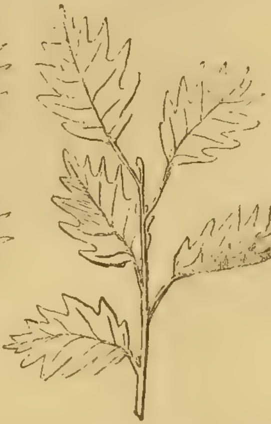
The following are the most striking varieties of this species

Hawthorn-leaved Common Alder (Alnus glutinosa var. oxyacanthæfolia) is a dense-habited bush or small tree with leaves much smaller than those of the preceding, sinuate and lobed so as to resemble in a marked degree those of the common Hawthorn.

Oak-leaved Common Alder (Alnus glutinosa var. quercifolia) is a distinct and handsome variety, with fine, bold foliage, similar in outline to that of our British Oak. This grows freely and retains its leaves longer than the type.

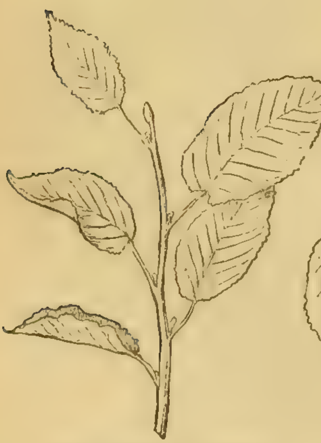
Golden-leaved Common Alder (Alnus glutinosa var. aurea) has leaves exactly the size and shape of those of the species, but of a fine golden-yellow colour. In suitable situations it does not scorch, and, although it is of somewhat slow growth, it is a most effective ornamental shrub, and one decidedly worth growing in the choicest collections. This does best grafted on a stronger-growing sort.

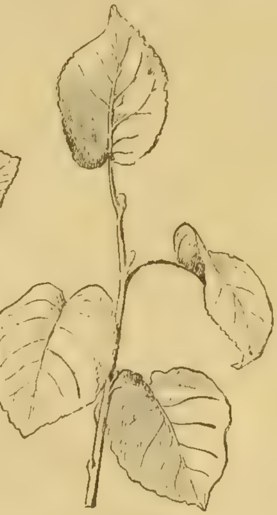

Alnus glutinosa var. imperialis.


Alnus glutinosa var. laciniata.

Red-veined Common Alder (Alnus glutinosa var. rubronervia) is a vigorous grower, with the habit and leaves of the type, the leaf stalks and midribs being, however, a bright red.

Large-fruited Common Alder (Alnus glutinosa var. macrocarpa) differs from typical A. glutinosa principally in its larger fruiting catkins and bolder leaves, and also in its more vigorous mode of growth.


Alnus glutinosa var. barbata.


Alnus cordifolia.

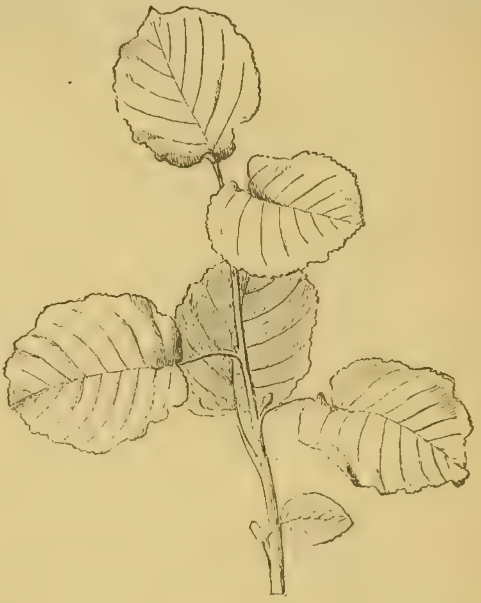
Fern-leaved Common Alder (Alnus glutinosa var. imperialis) is a distinct and handsome tree with elegant, drooping branches and Fern-like leaves, which are more deeply cut than those of the next variety. In some nursery catalogues it goes under the name of Asplenifolia nova.

Cut-leaved Common Alder (Alnus glutinosa var. laciniata) has deeply-pinnatifid leaves which, from their tendency to open out quite flat, give to the tree a totally different aspect from that possessed by the last-named variety, in which the leaves are often very concave, and the lobes always longer and narrower. As to the origin of this, Loudon quotes Thouin, who, in the year 1819, in the "Nouveau Cours d'Agriculture" states that the cut-leaved Alder was first found by Trochereau de la Berlière, and planted by him in his garden near St. Germain, where the stool still remains, from which all the nurseries of Paris have been supplied with plants, and probably all Europe.

There are also a variety with variegated foliage, and another, Alnus emarginata (Willd.), with nearly round, wedge-shaped leaves, dark green, with an edging of light green.

Bearded Alder (Alnus barbata) is by some regarded as a variety of A. glutinosa. It is a native of the Caucasus, being found on the western side of the Caspian Sea. It differs widely in its foliage from the common Alder, its leaves being pointed, having more or less doubly serrated margins, and often attaining a length of 6 in. or more by a breadth of 4 in. or 4½ in.; on the upper surface they are dark green. The most striking characteristic of the plant is furnished by the bright red-brown hairs which clothe the midrib and principal veins on both surfaces of the leaf, and are so marked as readily to catch the eye.

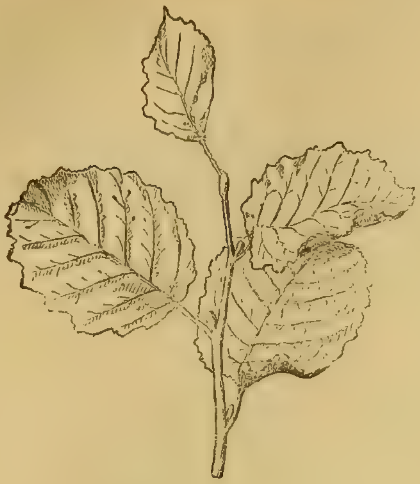
Oblong-leaved Alder (Alnus oblongata) is a large shrub or low tree from South Europe and North Asia, introduced by Miller in 1749. It has obtuse, somewhat egg-shaped, glutinous leaves, the axils of the veins being naked on the underside. Loudon says the finest tree of this sort of which he has knowledge was one in the Glasnevin Botanic Gardens, which, in 1834, was 30 ft. high.


Alnus cordifolia nervosa.

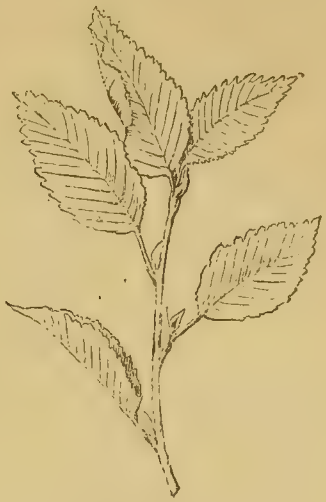
Heart-leaved Alder (Alnus cordifolia), sometimes also called the Neapolitan Alder, is a very distinct and handsome South European tree; its leaves, being nearly or quite smooth and of a glossy green, a shade or two lighter than those of the common Alder, give it almost the aspect of a Poplar. It is a fast-growing tree with light-coloured bark, and, from its fine pyramidal habit, it is very effective either in groups or as a single specimen. It remains in good foliage some time after most Alders are leafless, and is perfectly hardy in this country. The flowers are produced in March and April before the development of the leaves. The date of its introduction to this country is 1820.

Alnus nervosa differs from this in its more rounded leaves, which are not so decidedly heart-shaped at the base; it, however, seems to grow quite as quickly as A. cordifolia, and to resemble it considerably in other respects.

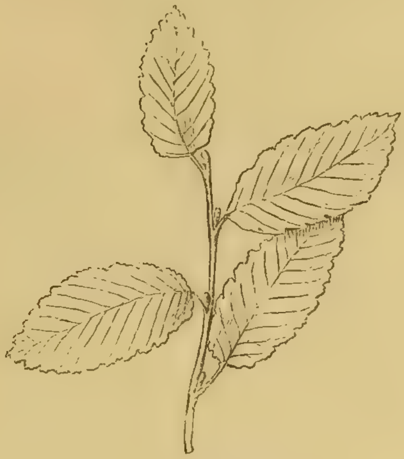
A. sub cordata is another Alder, a native of the Caucasus, which is also referred as a variety to this species; its foliage is, however, very much larger and bolder, darker green, and its general aspect is widely different both from A. cordifolia and A. nervosa. Its leaves measure about 6 in. long by 4 in. wide, whilst those of the two others



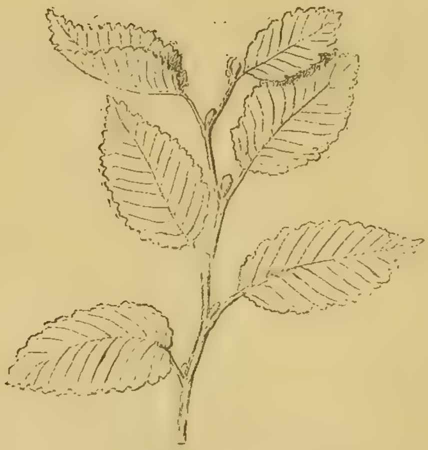
Alnus cordifolia sub-cordata.



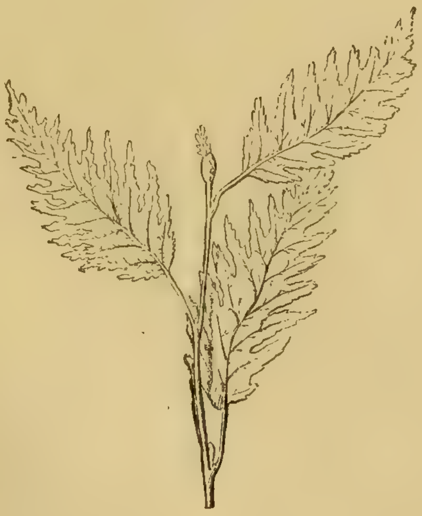
Alnus serrulata.



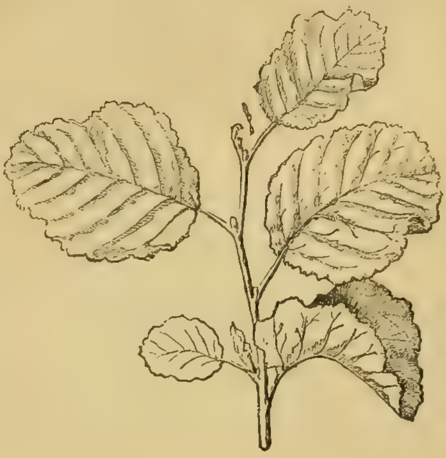
Alnus incana.



Alnus serrulata rugosa.



Alnus incana var. laciniata.



Alnus serrulata latifolia.

just mentioned are about 3 in. long by 3 in. wide; the relative length of the leaf-stalks, too, is different, those of A. sub-cordata being much shorter than the others.

Hoary-leaved Alder (Alnus incana) is one which will attain a good size even in dry localities, and which, as an ornamental tree, is well worth growing; it, as well as its varieties, is easily recognised by the smooth, greyish bark of the stem and twigs, and by the grey-green under surface of the leaves. In shape the leaves are ovate, pointed, with margins primarily divided into coarse teeth, which are themselves serrulate. In size they are about 4 in. long by 2 in. wide. It is found wild in North America (where it is known as the Speckled Alder), and is pretty widely distributed throughout the North Temperate Zone. The best of the varieties, which have at various times received names in different nurseries, &c., are as follows :—

A. LACINIATA, a noble tree, with handsome foliage, somewhat like that of A. glutinosa var. imperialis; the leaves are often from 6 in. to 7 in. long.

A. SUB-LACINIATA has smaller leaves with deeper primary divisions than A. incana, the secondary teeth, too, being much more evident.

A. PINNATIFIDA, when casually examined, seems to come extremely near the last-named, but for gardening purposes it is quite distinct; it is of slightly different habit, and the form, size, and serration of the leaves render it well worthy a varietal name.

A. GLAUCA has prettily-serrated leaves (the petioles of which are reddish), deep green above and glaucous beneath. This, one of the most beautiful kinds of the genus (according to Michaux), forms a tree in the United States from 18 ft. to 20 ft. high.

A. ANGULATA differs from A. glauca in its leaves being green underneath, and in its having green, not red, leaf-stalks.

Saw-leaved Alder (Alnus serrulata), a shrub from 6 ft. to 10 ft. high and a native of North America, makes a very pretty bush with its deep green foliage. The three following, which in the Kew collection are classed as varieties of A. serrulata, nevertheless differ from that very considerably.

Alnus Aenobetula.

Alnus japonica.

A. AUTUMNALIS has handsome leaves 6 in. long by about half that width, doubly serrated at the margins.

A. RUGOSA has leaves rather smaller than the last and more rugose.

A. LATIFOLIA has large rounded leaves, sometimes sub-cordate a the base, and with crenulate, weakly-serrated, decidedly wavy margins. They measure about 5 in. or 6 in. in length by 3 in. or 4 in. in breadth.

Curl-leaved Alder (Alnus undulata), a native of North America, was introduced in 1782 by the Hudson's Bay Company. It is a small shrub, not growing more than 3 ft. or 4 ft. high in the swamps of the mountainous regions where it is found wild, though Willdenow states that in 1811 a tree in the Berlin Botanic Garden had reached the height of 15 ft.

Birch Alder (Alnus Alnobetula) is a handsome bush found wild in the Mid-European and Italian mountains. It flowers in April (often in March) and produces a plentiful crop of very pretty catkins. The leaves are egg-shaped, pointed, and the same deep colour on both surfaces. In a state of Nature it only grows about 5 ft. or 6 ft. high, but in cultivation makes an elegant little tree about double that height.

Oriental Alder (Alnus orientalis) is a quick-growing tree with noble leaves measuring often 9 in. or 10 in. long by about 5 in. broad. This, a native of North and East Asia, is still a rare tree in collections, but it deserves to be much more generally known, its pyramidal habit and enormous ovate, acuminate leaves giving it quite a character of its own.

Japanese Alder (Alnus japonica) is a most distinct shrub with lance-shaped leaves 4 in. or 5 in. in length by 1 in. or 1½ in. broad, the margins of which are slightly serrulate. In colour the upper glossy surface of the leaves of this pretty sort is a shade or two lighter than in most other Alders, the whitish veins being very conspicuous on the light-coloured under surface. G.

Alnus orientalis.

WOODLAND WORK FOR THE END OF NOVEMBER.

In situations where holing was carried out early in autumn good work will have been done in planting, which in many localities has already made considerable progress. Very wet situations, if not filled up by the end of this month or early in December, should be left until spring, for, as it is not advisable to tread in retentive soils around the plants during wet weather, they do not become sufficiently close and consolidated to keep out frosts. The holes also become filled with water, so that transplanting, if continued, must take place under the most unfavourable circumstances. But whenever the hands are driven from planting, trenching, draining, fencing, or road-making may be proceeded with. Every opportunity should be seized to cart heavy materials and remove timber during frosty weather. Timber so carted and stacked near the saw mill is in a much better state for conversion than when covered with grit and dirt, which soon take the edge off the saw. Where coppice felling proceeds on an extensive scale, the work should be so arranged as to cut from the stub during open weather, laying the produce in drifts for trimming up and stacking on frosty days, if such occur. Early felling ensures chances of quick removal, and gives a great choice of customers by bringing the produce sooner into the market.

In open weather continue planting Acorns and Chestnuts; also collect cones of Scotch Pine, Larch, Silver, Norway, and Spruce Firs in localities where these ripen fit for use. Unless these are gathered in very dry weather, they should for some time be spread thinly in an open and airy loft before being stored in heaps for spring use. When required for planting, place the cones upon the hair of a kiln or Hop-oast, about 6 in. or 8 in. thick, and subject them to a heat of about 110° Fahr. for ten or eleven hours. They may afterwards be removed to the threshing-floor and beaten out with a light flail.

The felling of all kinds of deciduous trees, the Oak excepted, may now be proceeded with. Those trees which have a resinous sap may be cut down at any season of the year, as, on account of such sap being less fugitive than that of other trees, the timber does not open or rend in seasoning. Some old writers on forestry maintain that the Ash can be properly seasoned only when felled after the middle of November. Monteath says, "Ash should always be felled from after the 15th of November till the last week in January, and never before nor after that time to have good timber, and to do it justice; nor is it at all easy to season Ash timber properly when cut down at any other time." Where the bark of a tree contains a conservative quality, as in the case of the Larch, it should not be stripped off at the time of felling. The durability of posts formed of whole Larch, and let into the ground with the bark on, is much greater than that of equal-sized posts of the same material when squared or deprived of their bark. As long as the bark of a fallen tree remains sound, it defends the wood from the influences of sun and air; but rotten bark, by retaining moisture, hastens decay, and it also often harbours injurious insects. Cut down Elm, Poplar, Sycamore, Lime, and Plane trees where necessary. As the last two are largely employed for the manufacture of articles in which the whiteness of the wood is a principal consideration, they should be sawn up and the timber stowed away at once in a dry, but airy place.

Where such old trees as it may be considered desirable to retain show signs of languishing, they may sometimes be renovated by carefully pruning off all dead and decaying branches, and afterwards opening out a good trench round them at some distance from the stem, cutting off the ends of the larger roots, laying a drain so as to carry away superfluous water, and afterwards refilling with a good compost. The turf between the trench and the stem may then be removed and the soil well loosened, at the same time that a liberal dressing of the compost or fresh, rich soil is forked in. In trenching recently-cleared spaces which may require to be refilled with plants in the spring, all remains of roots and fibres should be carefully removed, and the ground thrown up as rough as possible. Only a small portion of the subsoil, say 3 in. or 4 in., should be brought to the surface at each trenching. A. J. Burrows.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Pinus insignis.—This is deserving of all "J. J. R." (p. 408) says of it, and even more, so far as appearance goes, in places in which it will thrive, for amongst the whole of the Coniferæ there is nothing to approach its beautiful green colour. There are many situations, however, in which it will not grow at all beyond the condition of a stunted bush, and, before planting it in quantity, it would be well to see if it does fairly well anywhere in the neighbourhood where soil and climate are similar. P. austriaca, on the contrary, will do well in most places, and for effect is second to none, except P. insignis.—T. Baines.

—— Three years ago I planted at Sprydoncote several plants of P. insignis as well as a great number of other sorts, and the growth of P. insignis this year has been astonishing. The leading shoot of one I measured was 5 ft. 6½ in. and that of another 4 ft. 11 in. The soil in which they are growing is deep loam and the situation high, but partly sheltered. Others near, but fully exposed, have also made very good growth. I consider this Pine eminently fit for general planting as a hardy ornamental tree, but I cannot speak as to the quality of its timber. From a packet of seed sown in the spring of 1877 I have raised 500 or 600 plants, the average height of which is 18 in., some of them being 2 ft. high. The seed was sown in boxes of light, rich loam, in which the young plants remained until this spring, having grown from 6 in. to 8 in. high. They were then potted in 4½-in. pots and plunged in an open quarter of the kitchen garden in rows 18 in. apart, surrounded with wire netting to protect them from hares or rabbits. I intend this season to have some thick turves of good loam cut about 9 in. square, turn the plants out of their pots, and plant them in the centre of each inverted sod, and again place each a good distance apart to allow them to make plants large enough for finally planting out twelve months hence. It thrives best in a well-drained soil. In the winters of 1860 and 1866 we lost many of our young stock in a small nursery in a low situation, while that planted in high sites stood the severest frost with impunity. Large trees also retain their fine rich green colour much better when in dry, sheltered situations than in low, wet ones. In the "Forester" it is called "the remarkable Pine," and from its growth and beauty it well deserves the name, but the quality of the timber is not described. Probably some of your correspondents may have seen some of the earlier planted trees cut up, and can report on the quality of the timber.—John Garland, *Killerton, Exeter.*

Elms in Kensington Gardens.—Mr. Bernard Coleridge asks (p. 428), What is the species of the handsome Elm on the west side of the Long Water, and of its neighbour on the opposite bank? They are very old friends of mine, though I have not seen them for many years. I believe the species to be Ulmus glabra. It cannot be U. viminalis, of Loudon, because that species was raised in 1817, and these are very much older than that date. There were several of the same species, noticeable by the peculiar striation of the bark when out of leaf, standing in a row immediately within the northern fence of the Gardens, west of Lancaster Gate; but the situation was always unfavourable to the development of their beauty. The species is the most graceful of all Elms with which I am familiar; and I endeavoured, some twenty years ago, to procure plants of it; but those sent me, though procured from a well-known nursery, were a different species, and I have been unable to secure it. It is certainly worth perpetuating. I cannot find these trees recorded in Loudon's "Arboretum," nor does his description of U. glabra indicate his knowledge of the variety, which may have been accidental. I never saw it elsewhere. These two trees and the forked Plane tree in the Green Park, once in Lord Coventry's garden, before it was absorbed by the Park, are, or were, the noblest specimens of forest trees in London.—J. J. Rogers, *Penrose.*

Autumn Tints in Hardy Azaleas.—The remarks under this heading (p. 428) are in every particular correct. During October and November the hardy Azaleas are the finest tinted leaved shrubs which we possess. Plants growing here and there amongst dark green-leaved Bays have a striking effect, and groups contrasting with fine, healthy Camellia trees have a still finer appearance.—Cambrian.

Eucalyptus globulus.—When lately at Fota, near Cork, my attention was directed to some very scraggy specimens of this Gum tree planted in a swampy place, and I was given to understand that it was a mistake to put them in such positions, for although the practice may answer very well in warm countries it will not do here, our winters being too long and cold for them; therefore, if we wish to grow these Eucalypti we must always plant them in the driest and warmest spots which we can find, a practice that holds good in the case of many other introduced trees and shrubs besides the Eucalyptus. I think, too, that they like a site somewhat exposed. A specimen of E. globulus is planted in one of the school gardens in Dundalk, and from the position being surrounded on several sides by buildings, and from other causes not readily explained, there is a constant swirl of wind, so much so, that scarcely anything will grow. No Conifer will live there, and even Hollies drag out a miserable existence, but this Eucalyptus planted three years ago is now a symmetrical, leafy, healthy specimen, 20 ft. high, a rich mass of foliage and a striking contrast to its surroundings.—T. Smith, *Newry.*

Variations in Coniferæ.—It is only when Conifers of the same variety are grouped together that one is able to fully appreciate the variety of form and colour that exists amongst them. The different gradations between young and old foliage is remarkable, a fact fully exemplified in Cupressus Lawsoniana and its varieties. We have here a long avenue of Wellingtonia gigantea, nearly every tree in which exhibits a different habit and shade of colour. As regards the beauty of Conifers as garden ornaments, they mostly appear to the best advantage when young.—J. Groom.

Trichostema lanatum.—This rare and handsome plant of Northern Mexico I have found, growing out of its usual range, in the central mountainous portion of San Luis Obispo County, California. It is figured and described in a Smithsonian report some years ago. It forms a very picturesque small shrub, with contorted branches, and twisted, narrow leaves of grey, veined with green. A bank of gravel, or a crevice in the face of a rock, exposed to the full blaze of the sun, is its favourite location. When the flower-spikes, which are very numerous, begin to show themselves, they are almost hidden in a white pubescence, which gives the name lanatum to the plant. The flower-spikes are like those of a drooping Salvia, from 6 in. to 9 in. in length, and of a reddish-purple colour, changing to a dark purple, and keeping in bloom a long time. The stamens, which are indefinite, form the marked feature of the inflorescence, for they extend over 2 in. out of the flower in a drooping, brilliant mass of rosy-red colour; so that this, relieved against the white, woolly stalk, makes a striking object.—C. H. S., *Niles, California, U.S.A.*

PLATE CLIV.

THE DAPHNES OF CHINA AND JAPAN.

(WITH A COLOURED PLATE OF DAPHNE ODORA VAR. MAZELI.)

There is a considerable number of quite distinct Daphnes in cultivation which have been imported from time to time from China or Japan, but their nomenclature is exceedingly confused. The confusion was caused by an error in naming the variety first introduced into this country. This Daphne was D. odora alba, introduced in 1771, by B. Torin, Esq., and originally cultivated under the name of D. indica. The Daphne indica of Linnæus is a totally different plant; nevertheless, the name is still retained in many gardens and in some catalogues for varieties of D. odora. In course of time the names sinensis and japonica, coupled with varietal names, were employed to designate some of the Daphnes received from the same region. From a horticultural point of view, several of these Daphnes are very different from each other, but it is a rule with botanists to regard all the plants which are known or believed to have descended from the same parent as belonging to the same species. This rule is a very good one in theory, though in practice it leads to curious results. For instance, many garden varieties would rank as species had they originated in a wild state and their parentage remained unknown. But although it is easy to criticise and expose the weak points of this rule, it is difficult to devise a more convenient and less objectionable system of nomenclature. Even gardeners, who distinguish and cultivate a multitude of varieties of some plants, find it necessary to classify them and associate each variety with a type under some trivial name. With an abundance of material before us, both in specimens and literature, we are unable to refer the Daphnes under the names cited above to more than one common type. This has been the opinion of several writers, but as their material was insufficient to determine the question, they have been content to record their opinions and leave the limitation of the species to others. The name odora is the oldest and most appropriate name, having been published by Thunberg in his "Flora Japonica," 1784; hence we adopt it.

Varieties of Daphne odora.

D. odora alba.—As already mentioned, this was the first of this group introduced. Sir J. E. Smith figured it in 1804 in his "Exotic Botany," plate 47, but his specimen was very poor, and the flowers are represented of a yellowish tinge. There is, however, a much better figure of it in Jacquin's "Hortus Schœnbrunnensis," iii., p. 351 (1798), which exactly represents what is now known as D. odora alba or D. indica alba. It is unnecessary to describe this favourite winter-flowering shrub, whose glossy leaves and fragrant white flowers must be familar to most persons. Like all the rest of the group, it is hardy in the south and west of the British Islands, while it is also indispensable as a greenhouse plant.

D. odora punctata.—This is figured in the "Botanical Magazine," plate 1587 (1813) as typical D. odora, and as the same as the variety alba, but improved by cultivation. Like that, it has usually dense terminal clusters of flowers, sometimes supplemented by lateral ones, the outside of the perianth being spotted and bordered with red. The origin of this is not recorded, except that it was received from Messrs. Loddiges. Occasionally in this and other varieties the axis of the inflorescence elongates, and the flowers then, instead of being crowded together, are distributed on short branchlets somewhat as they are in D. odora Mazeli.

D. odora rubra.—Generally speaking, we believe this is a more vigorous grower than the white-flowered variety, and succeeds better out-of-doors, producing its rosy-red flowers in profusion. There is a fine specimen in Kew Herbarium taken by the late Dr. Bromfield from a garden at Ryde, in the Isle of Wight, and in the note accompanying it he says that it was from a fine standard bush about 4 ft. high, which had been out several years unprotected, and flowered freely during the winter and spring months, and was apparently not in the least injured by the long and severe winter of 1845. A good figure of this is given in Sweet's "British Flower Garden," series 2 (plate 320). The drawing, it is stated, was made from a plant that flowered in the collection of Mr. George Smith, Islington, in 1836, and which had been imported from China about four years previously. A Daphne allied to this, and said to be a hybrid between it and the European D. collina, is figured in the "Botanical Register," 1838 (plate 56), and in the "British Flower Garden," 1827 (plate 200), under the name of D. hybrida. It has the more hairy leaves of the European species, and flowers intermediate between the two. Under the name of D. japonica, Paxton ("Magazine of Botany," viii., plate 175) figures a Daphne which is neither more nor less than D. odora rubra, having the leaves bordered with yellow. It is described as differing from odora in the yellow bordering of the leaves, and in the much richer fragrance of the flowers; but, like Roses, the varieties of Daphne odora vary in the quality and intensity of their perfume, and as to the variegation that may happen to any of them.

D. odora Mazeli.—This differs essentially from all the preceding varieties in the flowers being borne on short, lateral branchlets all along the branches, instead of being, as usual, in dense clusters, and almost confined to the ends of the branches. It is possible that it may belong to a different species, perhaps to the true D. japonica, which is described as having lateral flowers, but this is very uncertain. The native D. Laureola varies with mostly terminal flowers, or scattered along the branches, according to the vigour and situation in which it is growing; but, whatever its origin, its horticultural value remains the same. It was named by M. Carrière ("Revue Horticole," 1872, p. 392) after Mr. Mazel, who received it direct from Japan in 1866. It has the character of being extremely hardy and succeeding in almost any soil or situation. The flowers are produced in midwinter, and are consequently often injured by frost, except in very mild situations; but it is equally deserving, with the others, of a place in the cold greenhouse.

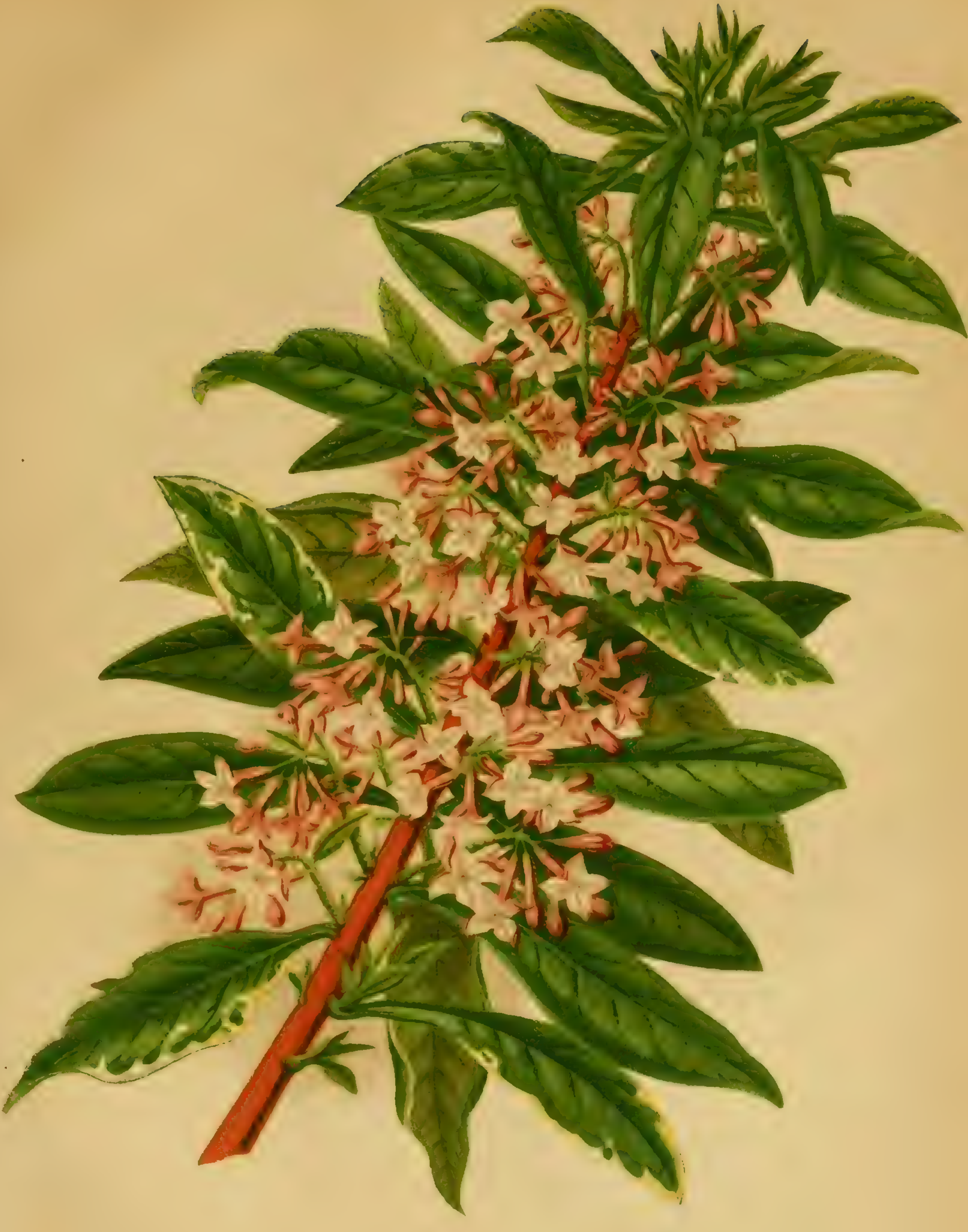
Two other species of Daphne have been introduced from China and Japan, namely:—

D. Genkwa.—This beautiful shrub was introduced by Mr. Fortune, who found it in a nursery garden near Shanghai, in the winter of 1843, and it was described by Dr. Lindley as a new species under the name of D. Fortunei. It subsequently flowered at Chiswick, and a coloured plate of it was published in the "Journal of the Royal Horticultural Society," vol. ii., p. 34. Although a very pretty and very floriferous plant, it does not appear to have spread much in gardens. Mr. Fortune wrote very highly of it in 1847. He met with it in 1844 growing wild on the hills in the province of Che-kiang. It is a deciduous species, and Mr. Fortune remarks, like the English Mezereon, it is the harbinger of spring. In March and April the flower buds expand, and then the whole of the hillsides are tinged with its beautiful lilac-coloured blossoms, and have a very gay appearance. Siebold, who gave it the above name, saw it in gardens only in Japan.

D. jezoensis.—A pretty, yellow-flowered, Japanese species of which we have only seen dried specimens, and a coloured figure in the "Gartenflora" (plate 496). It has rich green foliage, and the fragrant flowers are borne in terminal clusters. Introduced into Russian gardens by Maximowicz. W. B. Hemsley.

Messrs. Rodger, McClelland & Co., of Newry, who furnished the specimen from which our figure of D. odora Mazeli was prepared, writes as follows concerning it: This is undoubtedly one of the handsomest of all the Daphnes. Its robust and leafy character, and also its habit of producing axillary heads of flowers for long distances along its branches make it as charming as it is useful, because its flowers are very similar, both in appearance and fragrance, to those of D. indica rubra, and the axillary branchlets are long enough for cutting purposes. The annexed figure is a representation of one of the strong shoots; on the smaller branches the flower heads are terminal. It has proved quite hardy in the north part of Ireland, both on walls and also in open quarters. Like most of its congeners, it prefers a partially-shaded position, although it will succeed remarkably well in a full south aspect, a situation in which it is at the present time (middle of November), just on the point of opening its first flowers. Its very hardy character will render it a most useful plant for many purposes, as, for instance, for the decoration of cool greenhouses, in which it will fill the air with delicious perfume; for window gardens, and, in fact, for all and every purpose where a sweet-scented plant is required during winter and early spring.

Rhodochiton volubile.—A plant of this old and useful greenhouse climber is now finely in flower in Mr. Joad's garden at Wimbledon. It is trained under the roof of a cool greenhouse, and is literally covered with drooping, bell-like, curiously-formed, violet-purple blossoms. It lasts in flower for a long time, and is well worth extensive culture in small houses. It would also make an attractive plant grown in the form of a standard trained over an umbrella-shaped trellis.—S.



PROPAGATING.

Zonal Pelargoniums.—Pelargoniums for bedding during the following season may be increased by means of cuttings made, as shown in fig. 1, in August or September, either in the open ground or in pots in the greenhouse. A bed or border should be dug; and if light and sandy, so much the better. Rake the surface level, press down the soil lightly, and insert the cuttings in rows, leaving a little space between them for clearing out the leaves that will fall from them. In about a fortnight loosen the soil between them a little with a small stick, and if dry give it a moderate watering. The gold and silver tricolors and the white-edged varieties can all be prepared in this way. In regard to these, it is a good plan to have a box or pot of dry sand, and to drop a little of it in each hole along with the cutting. All of them, especially the green-leaved kinds, will be ready for potting in about three or four weeks. In the case of new or scarce sorts, cuttings may be put in at any time of the year. Single eyes, as shown in fig. 2, must be supported by means of a small stick or wire, and they must be set on a slight bottom-heat, on which all the variegated sorts do best placed singly in 2½-in. pots. When struck they should be moved to the shelves. Some of the weaker and finer sorts do best grafted on strong-growing seedling plants of green zonals, which must be raised from seed for that purpose. The stock, which should be about the same size as that of the graft, should be cut as shown in fig. 3, and on that should be fixed the graft (fig. 4). The two should then be tied firmly together with worsted or matting, when they will unite in about six weeks. They must not be covered up, but should stand exposed in the propagating house shaded from full sunshine. The best months for grafting Pelargoniums are July and August, when the wood has partly ripened. H. H.

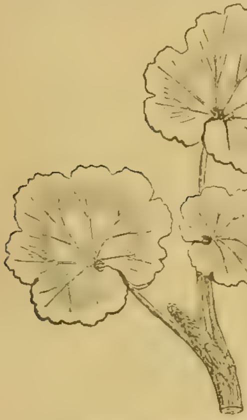


Fig. 1.—Cutting of Zonal Pelargonium.

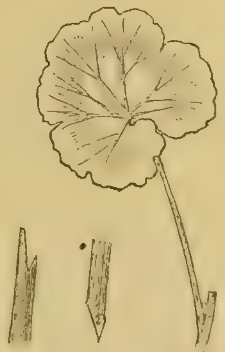


Fig. 3. Fig. 4. Fig. 2.

Grafting Zonal Pelargoniums.

Wire-layering of Plants.—Much has recently been written in The Garden on layering; but I have not seen as yet any allusion made to a system which has been adopted by me, more or less, for these last forty years, viz., the twisting of a piece of fine copper wire tightly round the branch to be layered, and sufficiently tight to indent the bark. I never found this practice to fail even with the hardest of layering wood. The first plant operated on was Berberis dulcis, when that Berberry was rare in this country, and owing to the hard, wiry character of its stems it was impossible to get them to root by the ordinary method of layering, while under the wiring process they readily submitted. The other plants operated on were the Andromeda floribunda, Abies Pattoniana, A. Hookeriana, Azaleas, Rhododendrons, Roses, and many others. After preparing the shoots by trimming them up, particularly when leafy or branchy, the copper wire is twisted round the branch. If short and springy, they are pegged down and covered with soil; if the soil be dry, a little Sphagnum Moss and a few stones are laid over the surface. Soon after layering a swelling of the bark will take place immediately above the ligature. During the following year it will be found that roots are freely produced from the swollen portion, particularly round the under part of the swelling. When rooted the layers can be detached immediately below the wire. By this method all the kinds tried made excellent plants.—James McNab, *Royal Botanic Garden, Edinburgh.*

GARDENING FOR THE WEEK.

Flower Garden.

Auriculas.—This is a very trying month for these, especially if the weather be close and fogs prevalent. The decaying leaves are very numerous, and, if not constantly removed, are apt to cause mould near the stem, which may spread to the stem itself, and ultimately cause the death of the plant. If it be necessary to water the plants, as it is occasionally, for the soil must not be quite dried up, do it in the morning before midday; and it should also be done on a sunny day to allow the water to get dried up before night; just fill the pots with water, and neither wet the leaves nor run the water over. Fumigate with Tobacco smoke if there be any trace of green fly on the plants, and continue to do so until that pest is quite destroyed. Many are now raising seedlings. If the seeds were sown as soon as they were ripe in July or August, there will still be small plants appearing above ground. In favourable weather slugs will be on the outlook for these, and must be watched for and destroyed. Ventilate the frames as much as possible, removing the light entirely during fine weather. Dry frosts do good, and it is not at all necessary to shelter the plants from them at present. The lights should be placed over the plants at night, as a matter of course.

Carnations and Picotees.—These have now all been potted and the pots have been placed in cold frames for the winter. I plunge the pots in Cocoa-nut fibre, which answers the purpose perfectly, but any other light, dryish material will do. Some growers do not plunge the pots during winter, as, owing to Carnations and Picotees being like the Auricula as regards hardiness, frosts do no harm to them. A plan adopted by Mr. Dodwell is certainly worth attention in large towns where the plants are much under the influence of smoke and a damp heavy atmosphere. His frames are raised from the ground so that air can circulate freely underneath the plants, which are on a raised stage or platform of wood. Some of the northern growers plant out about this time their Carnations and Picotees in the open ground. My own experience would suggest that only the strong-growing varieties should be tried in this way. If any of the more weakly ones be planted out, I would plant them in pure turfy loam, and over the plants place a bell-glass, which should be raised on stones 3 in. above the ground. The principal use of the bell-glass is to keep off rain, snow, and hoar frosts during winter. Picotees are rather more hardy than Carnations, and would be better able to withstand wet.

Gladioli.—These have not yet been taken out of the ground, but we will probably lift them before long; while the weather is dry it is best to leave them in the ground. Cold rain is most disastrous in its effects upon the roots. Directions were given a few weeks ago as to the way in which the roots should be taken up. Seedlings that have been growing all the summer in pots should now be shaken out of them, because when the leaves decay the bulbs start into growth immediately. If any of them have done this the best way is to pot such bulbs at once; a dozen or more may be potted in a 6-in. pot, and the pots may be plunged to their rims in some Cocoa-nut fibre refuse.

Tulips.—No time should now be lost in getting these planted out in beds. Old growers of them in the neighbourhood of London used to be very particular as regards the time for planting them out. This was generally Nov. 9, but they will do just as well if they are planted a little before that date, or even a week or two after it. An old writer has said, "The Tulip asketh a rich soil and the careful hand of the gardener." The Tulip beds should be deeply trenched and plenty of rich manure should be worked in near the bottom of the trench, and some of it about 6 in. under the surface. Spread 3 in. of good, rotten, turfy loam over the surface of the beds, and in this plant the roots. The crown of the bulbs may be about 2 in. below the surface of the ground, and some sharp river sand may be placed under and over the bulbs. Show Tulips are divided into three classes—Bizarres, Byblœmens, and Roses. These should be mixed together in equal proportions. There are usually seven rows in a bed, and the bulbs should be planted about 9 in. apart. The principal growers plant two beds parallel to each other, with a narrow path down the centre. A span-roofed framework, covered with movable canvas, must be erected to shelter the flowers from the sun when they are expanded, and in cold, wet districts the plants must also be protected from severe frosts.

Pyrethrums.—Where it is intended to increase the stock of these it is a good plan to lift the roots now and divide them, potting each division into 5-in. or 6-in. pots, according to their strength. Place the pots in a cold frame, which should be freely ventilated, and attend to watering the plants as they require it; replant in beds in spring. If the beds be not disturbed, it is a good plan to place 2 in.

of rotten manure on the surface of the ground between the plants. Phloxes, Pentstemons, Antirrhinums, Delphiniums, and other plants of a similar character should be treated in the same way, and any of these growing in pots should have the protection of a cold frame.

Hollyhocks in frames must be looked over occasionally, and any decaying material should be promptly removed. Ventilate freely, and in fine weather remove the lights entirely.

Dahlias must also be seen to; the old stems of some of them may have been accidentally stored in a damp state; if so, they will become covered with white mould, which goes down to the crown, and sometimes destroys the incipient growths.—J. Douglas.

Hardy Fernery.

Here many plants are generally used that require some artificial means of protection, and nothing answers the purpose better than a few dry leaves. With a covering of this kind in sheltered situations many half-hardy plants may be wintered with safety, and be made to add much to the charm and interest such places usually afford. Where bulbous-rooted subjects have been recently planted, much watchfulness will be required to see that they do not get disturbed by rats or mice, which soon discover them and often cause damage before it is observed.

Indoor Plant Department.

Conservatory.—In order to insure thorough rest to roof climbers, they should now be kept as dry at the root as the nature of the various plants with which they are associated will admit without causing them to flag or shed their leaves prematurely. In the case of such as are still growing and blooming, which some of them do more or less all the year round, as, for instance, the beautiful Tacsonias Van Volxemi and exoniensis, the Habrothamnus elegans, and a few others of that character, it will be necessary to maintain the soil in a moderately moist condition, but not to the extent usual earlier in the season when growth is more active. The mildness of the autumn has tempted many to leave some of the more hardy stove or intermediate-house plants in the conservatory much beyond the usual time, and where any of these are still standing they should at once be removed to warmer quarters, for although they may not show immediate signs of suffering, they are sure to do so later on, unless such a temperature can be maintained as to suit their requirements. In no case, however, where there is a mixed collection of plants to be treated, and more especially if Camellias form a part, should the temperature of the conservatory range higher than 40° to 45° till after the latter have done blooming, as a very little excitement at this season will cause them to cast their buds; or should they remain on and expand, the flowers are never anything like so fine, either in size or texture, as when they are allowed to come on naturally. Forcing Camellias now with a view to bring them on early is quite a mistake, and invariably ends in disappointment, as no plants are so impatient of artificial heat during the winter as they are; what forcing they are subjected to should always be given after they have shed their blooms —a time when they will bear and enjoy almost as much heat as any stove plant, if accompanied with a proportion amount of atmospheric moisture. Another frequent cause of these shedding their buds is dryness at the roots, and should this occur often, it is as fatal as too much heat. The buds may remain on and appear all right till they ought to begin to swell rapidly, when, instead of that taking place, they shell out like ripe Filberts, to the surprise of those in charge of them. Where any doubt exists respecting the soil being in proper condition, an examination should at once be made by carefully breaking it up with a trowel or other implement as deep down as the roots are supposed to have penetrated. Borders in conservatories are often very deceptive from the frequent surface dampings they receive in order to maintain a sufficiently humid atmosphere during the summer and early autumn months, a course which makes the top appear quite moist, while the bottom portion where the roots are may be dust-dry; a mere superficial examination never reveals this, so that plants frequently languish from a cause little suspected. It often occurs, too, that the air of the house in which Camellias are standing is drier than they like, and especially is this the case when the conservatory adjoins the mansion; or there is a continuance of frosty weather, necessitating the use of much fire-heat to keep up the proper temperature. A gentle bedewing over the heads of the plants will do much to counteract this without in any way overcharging the atmosphere of the house or rendering it too damp for any other subject that may be in bloom. Chrysanthemums will now be the principal flowers for the decoration of the conservatory, and in order to prolong their beauty, they should be placed where they can get plenty of air and be well supplied with water at the roots, taking care never at any time to allow them to approach anything like dryness, or the duration of the blooms will be very short. Late-flowering kinds should be kept retarded as long as possible by giving them full exposure whenever the weather is favourable, by which means they may be had as late as Christmas, or even into the new year. Sericographis Ghiesbreghti will now be coming in, and if used in the conservatory should be placed at the warmest and driest end, where if not over-watered they will stand well and last in beauty for several months to come. For associating with the Sericographies to form groups, Libonia floribunda and L. penrhosiensis are admirably adapted, and being of an entirely distinct colour, although resembling each other so closely in the form of their flowers and general habit, they afford a most pleasing contrast. The trio are most charming plants for winter blooming, and well adapted for conservatory decoration. They all succeed and expand their flowers freely in a night temperature of about 45°, with a slight rise during the day, if the air of the house in which they are placed be kept moderately dry.

Forcing Houses.—In order to keep up a good supply of flowering plants, it will now be necessary to get in heat the first lot of Azaleas, making choice of those which are known to be early bloomers, such as Fielder's White, Pauline Mardner, and amœna, the latter of which, from its bright colour and free-flowering habit, is one of the most valuable for forcing. In selecting any of the above-named sorts, pick out those having the most prominent buds, and that were brought early into bloom last season, as they can be got in in much less time than others that were allowed to come on naturally. Plants that have once been forced acquire the habit of flowering early if properly treated after by giving the requisite heat and moisture to complete their growth, and get it properly matured before they are subjected to any exposure or suffer a check. Ghent Azaleas, Lilacs, Lily of the Valley, Spiræa, Solomon's Seal, Dicentras, and similar subjects may be considerably forwarded by placing them in the Mushroom house or any close shed where a little fermenting material can be introduced to afford the necessary warmth. Plants like the above may be forced much more economically in places of that kind during the first stage of their growth than they can in any glass structures, where there is a constant, rapid escape of heat through the laps of the glass and other crevices. In the Mushroom house or ceiled shed, the temperature seldom varies more than a degree or two, and the atmosphere can always be kept regularly charged with moisture, so that forcing can go on without interference from any changes that may take place in the weather. Where there is a large demand for forced flowers, a close, ceiled shed, with a hot-water pipe running through it, and a bed of leaves and tan on the floor in which to plunge the pots, would form one of the most valuable places a cultivator could have, as all things of an herbaceous or deciduous nature might be helped forward by being placed therein till they pierced the soil or began to expand their buds so as to require light. The first-potted Hyacinths should now be examined, and if found to have pushed a little top-growth, and to have well filled their pots with roots, may now be got into heat; but, before doing so, place a tuft of Moss over each crown, or cover the same with a small flower-pot for a few days, that the sudden transition from dark to extreme light may be avoided, or the tips of the blanched leaves may suffer injury.

Lilies.—These plants, many of which have for years been comparatively neglected, are now much sought after, the usual mistake, when there exists a mania for any particular family of plants, being committed of attempting to grow all kinds, whether good or indifferent. Numbers have been sorely disappointed by purchasing quantities of Lilies by the description given of them, and that really are not worth growing by any but those who intend forming complete collections. We should advise amateurs to aim rather at selections of the handsomest and most distinct varieties, and, in the case of those that are not certain of succeeding planted out in any locality, to first grow them in pots. When well managed in this way there is a better chance of them doing satisfactorily than by planting out, except where the soil and climate suit them. Numbers who have attempted the cultivation of Lilies have only succeeded indifferently, although they are plants of very easy culture provided the peculiarities of their nature are studied. For example, they should never be potted or have their roots disturbed when they are in active growth; they should never be allowed to suffer for want of water from the time their tops have appeared above ground and have attained considerable size, and all through the growing season, when they have a good amount of leaf surface, they require plenty of water. Another point of equal importance in pot culture is that from the time the tops have died down in the autumn the soil should never be allowed to get too wet or too dry. The present, when the tops of almost all are dead, is the best time for repotting, in which operation disturb the roots as little as possible. Good moderately sandy loam, with one-sixth well rotten manure and leaf mould in equal proportions, thoroughly mixed with the soil, will grow them well. In potting cover the bulbs with about 4 in. of soil, and stand the plants through the winter in a house, pit, or frame, from which frost can be excluded.

Carnations in Pots.—A few more of these useful plants may be placed in a house or pit where a night temperature of 50° can be maintained; elevate them as near the roof as possible, and do not allow them to become dry at the roots so as to injure them, it being necessary to guard against this defect, particularly in the treatment of plants that are ranged on shelves over the paths where they are not immediately under the eye, and consequently their requirements are less likely to be noticed. Plants of these required for flowering later during the winter should have their pots plunged up to their rims in coal ashes, in a frame or shallow pit, where they can be protected from frost.

Indoor Fruit Department.

Peaches and Nectarines.—Where fruit is required early in May, a house in which the wood had ripened early may now be closed; but to be successful it must be forced very gradually, for to attempt brisk forcing would defeat the object in view. If the border has been renewed, and both trees and structures cleared, it may be necessary to give a moderate supply of tepid water at the roots, but if it be found that the soil is in a healthy, moist condition, it is better to omit watering for some time. Outside borders should be covered with dry litter, leaves, or Fern, and wooden shutters, tarpaulin, or house tiles, should be placed over the whole to throw off wet. Some have strong faith in thick coatings of manure and other fermenting material, for heat being applied over the roots; but, after trying numerous experiments, I am of opinion nothing is gained by this practice. The active roots which draw up nutriment to support the trees and fruit are either at the front of the border, or far beyond it, and the covering in this case is often the means of doing more harm than good by directing the wet to the feeders, keeping them cold and sodden. To be safe it is necessary to be certain how far these roots extend, and let them be protected their whole length. When the roots are wholly inside this difficulty does not exist. Trees always do best when their roots have filled the inside border, and have their full liberty to grow outwards afterwards. Syringe the whole surface of the house, allowing every branch to be well moistened, but the paint used on the trees against insects need not be washed off by applying the water against it with the syringe too forcibly. The floors and inside borders may be frequently moistened with a rosed watering-pot, but a stagnant atmosphere must be avoided. The temperature need not be more than from 40° to 45° for the first few weeks, that is, supposing the weather should be cold; on sunny days give plenty of air, but, at the same time, use the syringe after. It is much better to begin forcing in good time than late and have to drive the trees on quickly. On mild nights it is well to leave on a chink of air. If the fruit-bearing wood be soft and badly ripened, forcing should be proportionately delayed. Figs are more easily forced than Peaches and Nectarines; dryness at the roots or cold and wet soil often causes the soil to drop when about to swell off towards the ripening state. Brown Turkey and White Marseilles are the most early forced. A good surfacing, as for Peach borders, is advantageous, and preparations in other respects must not be neglected. For trees grown in pots a fresh surfacing of loam, rotten manure, and bone meal is suitable, and they must have good drainage. The pots should be plunged in a bed of leaves giving out a mild heat, say 75°, laying a turf or two at the bottom of the holes in which the pots are to be placed. When the roots grow through the pots and into the earth, giving the latter a good soaking of tepid manure water assists greatly to swell off the crop to a great bulk; 45° at night is a sufficiently high temperature.

Kitchen Garden.

Celery.—We often hear complaints of Celery decaying prematurely through the winter, which is traceable to two causes—either the sorts grown are inferior, spongy, or hollow in the stalks, or the earthing-up and protection during frost has not been well managed. The last crop of all, intended to come in for use after that which we have already spoken of, should only be about half earthed-up—that is, the ridge ought not to be brought higher than the centre leaves, leaving those exposed to the light until later on, to protect which and the general crop from severe frost, sufficient material should be in readiness, in the shape of stable litter, Asparagus, or dried Pea haulm, dried leaves, or, best of all, Fern. Where possible, secure a good supply of this useful material, which, for all purposes of protection from frost, is superior to all others. It must, however, be kept under cover, for, if it is allowed to lie in masses and get wet, it will rot. It is now dead and in right order for gathering. A dry day may be chosen for cutting it, and it may be stowed until required under a temporary covering of any kind, or placed a couple of yards thick over Potatoes, Carrots, or Beet, in the root-shed, and here kept until wanted. Not only is this Fern (the common Bracken) good for the purposes mentioned, but it is also invaluable for laying over beds of Hyacinths, or for placing round crowns of tender herbaceous plants, the collars of Tea Roses on their own roots, or for putting around the heads of standard Teas. It may be added that there is nothing objectionable or untidy in its appearance when thus used.

Potatoes.—It will be well to again turn over the crop of Potatoes and remove any diseased ones that may have escaped detection previously, as, if allowed to remain, they affect all they come in contact with. Even if there is a total absence of disease they are very much improved by turning over in this way if at all damp. To have Potatoes in the best condition they should be quite dry for a considerable time before using, for this reason—the quality of Potatoes kept in clamps is never to be compared with such as are stored in a dry shed. When the camping system has to be resorted to for wintering Potatoes, they should always be taken out and placed for a month or six weeks before using in a place where they will get dry.

Hardy Fruit.

Preparation for Fruit Trees.—A short time ago I urged the necessity for preparing land for fruit trees of all kinds, including bush fruits, and for completing the planting as soon as the season would permit it. Whatever preparation of the ground yet remains to be done should at once be carried out and the planting pushed on. All the advantages are on the side of completing this work without delay; later on, short days, and the condition of the soil, prevent the possibility of its being done so well or expeditiously. There is another matter connected with early planting that amateurs who have trees to purchase will do well to bear in mind. Those who procure trees early have the pick, which are very often worth double that of the plants sent out subsequently. Trees of any considerable size that are removed should, as soon as planted, be secured from injury from wind by stakes, for, if allowed to be shaken about so as to disturb their roots, it will do them serious injury; trees that require support after planting should have three stout stakes, each about 5 ft. in length. These ought to be driven into the ground about 2 ft. from the trees in a slanting position, so that the tops of the stakes will meet together a yard or so up the stems, at which point they should be secured with strong tarred twine, lapping the stems of the trees with a straw rope, so as to keep them from injury by the stakes.

Extracts from my Diary.

November 25.—Getting in another lot of Ashleaf Kidney Potatoes in pots. Making up a hotbed for Asparagus with manure and leaves that had been previously well turned and mixed. Planting out the last batch of Coleworts, and stirring the soil amongst those previously planted.

Nov. 26.—Potting herbaceous Calceolarias, and fumigating Cyclamens to kill green fly. Cutting down Jerusalem Artichoke stems and clearing them away, and covering up a portion of the roots with long litter to keep the frost from them. Adding to late Celery a little more earth whilst the soil is dry and in workable condition.

Nov. 27.—Sowing a three-light frame with Radishes. Potting a quantity of Echeverias, and filling a number of boxes with them. Covering up Endive and Lettuce to blanch. Getting all Peach and Nectarine trees unnailed. Finishing tying Raspberry canes and giving a good coat of well-rotted manure between the rows.

Nov. 28.—Sowing 100 pots of French Beans and earthing up those previously started. Clearing out decayed vegetables and dead leaves amongst growing crops. Making up a new hotbed for forcing Asparagus. Rolling lawn tennis ground and other turfed surfaces. Pruning third Black Hamburgh house.

Nov. 29.—Getting a few more Cinerarias and Primulas into gentle heat to bring them forward. Giving second early Vinery a top-dressing inside, and afterwards a good watering. Looking over Cauliflowers, turning down leaves where required, and removing those that are most forward to an open shed.

Nov. 30.—Clearing up leaves and otherwise putting the pleasure grounds in order. Rolling down all gravel walks firmly. Looking over fruit-room, and clearing away fruits that are beginning to rot. Looking over Pines, and watering such as require it; tying up fruit where necessary. Fruit in use for dessert: Pines, Grapes, Apples, Pears, Medlars, and Nuts.—W. G. P., *Dorset.*

Autumn Broccoli.—I am still cutting Veitch's Self-protecting Broccoli, of which I was curious to weigh two or three heads. They averaged 4½ lb., and not a particle of the flower was to be seen, the foliage covering it in the most perfect manner. I shall make this a standard variety in future.—R. GILBERT, *Burghley.*

THE LIBRARY.

HEREFORDSHIRE POMONA.*

It is a pleasure to see the handsome first part of this which we hope will make a noble book. The day of books of this sort had appeared to be past, though at one time they were more common, especially of the large form of the one before us. The first things that strike attention in such a work are naturally the plates, and these are exceedingly good. Such woodcuts as are used are not at all equal to the plates, but then they are of much less importance. The book seems exceedingly well done in all respects, except as regards its form, which is, perhaps, cumbrous. The work is produced by the Woolhope Naturalists' Field Club, and was originally intended to form a work of local character, as its title indicates, but the great and widespread interest with which the announcement of its publication had been received has induced the Woolhope Club to believe that it will be more useful if its scope be made more general. It is intended, therefore—subject to the favour and support it may meet with—to make this Pomona a thoroughly English work. Its local name will still be retained, but it will embrace all Apples and Pears of established merit cultivated in Great Britain, even though some of the new or special varieties may not, as yet, be grown in Herefordshire. The coloured drawings, the woodcut outlines and sections, and the greater part of the letterpress are original, and their production very expensive. The Woolhope Club, however, has neither the intention nor the desire to make any profit from the publication of the work; and, beyond the copies supplied to its members, the number offered for sale to the public is very limited, and only sufficient to meet the great expenditure of a work of this character. The first part, now published, comprises the early history of the Apple and Pear. Thomas Andrew Knight (president of the London Horticultural Society from 1811 to 1838) and his work in the orchard; the Fox-whelp Apple, Pomeroy, miscellaneous dessert Apples, viz., Joanneting, Summer Golden Pippin, Court of Wick, Devonshire Quarrenden, Borsdorffer, Worcester Pearmain, Kerry Pippin, and Herefordshire Spice Apple; the Monarch and Althorpe Crassane Pears; new Northern Greening Apple, Spring Grove Codlin, Stirling Castle, Wormsley Pippin, Keswick Codlin, Manks Codlin, Lord Suffield, Hawthornden, and Tom Putt. The second part is announced for publication in 1879, and will contain, in continuation of the introductory matter, a paper on "Modern Apple Lore;" "A Sketch of the Life of Lord Scudamore," by Dr. Bull, with a full-page portrait of his lordship; and a paper on "The Cordon System of Growing Pears," by Sir Henry E. C. Scudamore Stanhope, Bart., with a full-page woodcut of the cordon wall at Holme Lacy. These will be followed by six coloured plates of such different varieties of fruit as may be procured in perfection during the ensuing season.

Meehan's Flowers and Ferns of the United States.—In the recently-arrived numbers of this book we notice especially Gerardia pedicularia, a member of a beautiful family not in cultivation; the singular little Snake-mouth Orchid Pogonia; the spring beauty Claytonia virginica (this plate does not show the delicate beauty of the plant; a purplish variety of the Anemone caroliniana, a plant which we do not remember to have seen in flower in our gardens; the Swamp Rose (Rosa carolina) and the old Phlox reptans, long known under the name of verna in English gardens. The plates, the letterpress, and, above all, the printing and paper are excellent.

The publication is announced (Ch. Stahl's Verlag in Neu-Ulm) of a "Grosses Illustrirtes Kräuterbuch," containing a complete description of all plants and herbs in reference to their uses, their effects and application, their culture, collection, and preservation. It contains instructions for the preparation of all kinds of medicines, juices, syrups, conserves, essences, powders, &c. The work contains coloured illustrations, and is published in fifteen parts.—"Nature."

Messrs. W. B. Whittingham & Co., of Gracechurch Street, announce a third edition of Col. Money's treatise on "Tea Cultivation and Manufacture." The entire work has been revised and much extended, and now makes an important demy octavo volume of 200 pages.

ROSES.

DIFFERENT MODES OF GRAFTING.

(Continued from page 426.)

Double Cleft or Crown-grafting.—When the diameter of the stock will allow of it, we may put on two scions opposite each other, as shown in fig. 15. The scions are, as in single cleft-grafting, placed at the extreme outer edge of the cleft, so that the bark of each of the grafts is in contact with that of the stock. At C is the eye whose growth will favour the union of the scion and stock. At B is shown the head of the stock, which, in this instance, is cut at right angles to the axis of the stem. This mode of grafting facilitates the ascent of the sap by equalising its flow all round the head of the stock, besides which the head of the resulting Rose bush is much more regular.

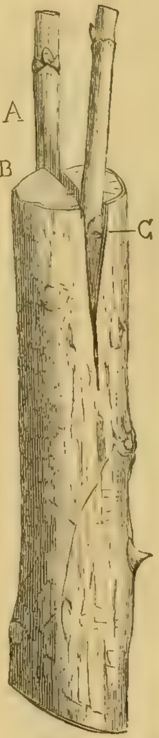


Fig. 15.—Double cleft, or crown grafting.

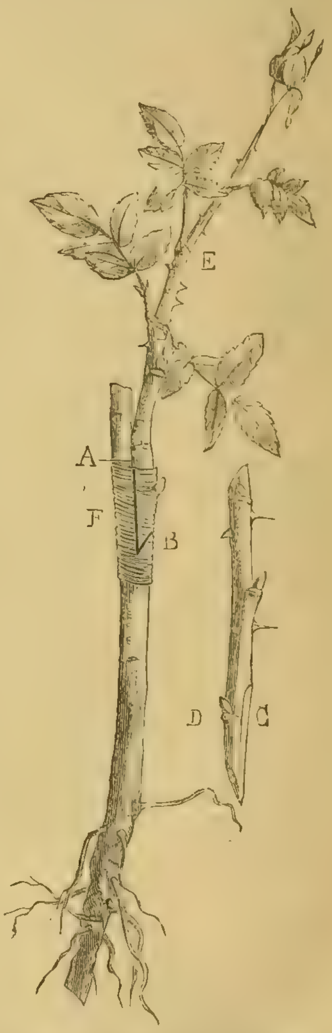


Fig. 16.—Chinese, or tongue grafting.

Chinese or Tongue-grafting.—Fig. 16 represents a very solid kind of graft, which does not produce a swelling, and which allows the Rose grower to use a stock of very slender dimensions. It should always be well covered up with grafting-wax.

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* "The Herefordshire Pomona," with the most esteemed kinds of Apples and Pears. Edited by Robert Hogg. London: Hardwicke & Bogue; Hereford: Jakeman & Carver.

B is a notched slice which is cut through the bark of the stock ending at A, and about $\frac{3}{4}$ in. in length, against which the cut portion of the graft C is pressed. E is the shoot of the graft, and F the ligature.

Double Tongue, Shoulder, or Chink-grafting.—This method of grafting, which is shown in fig. 17, succeeds well with either the Rose or the Apple. The graft is slit up through the middle to the depth of 1 in., half of the cut portion is sliced off, and the free end cut to the shape of a wedge, a wedge-shaped notch being made on the other side, as shown at B and C in fig. 17. The head of the stock is cut in the same way, but of course in the opposite direction, so that all the parts fit together exactly. The graft is bound up and covered with grafting wax in the usual way. This kind of graft is very solid. It does not form a swelling, and as the line of the scion and the stock are in the same direction, the resulting bush is of regular form.

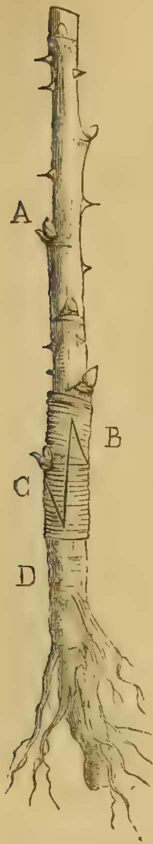


Fig. 17.—Double-tongue shoulder, or chink-grafting.

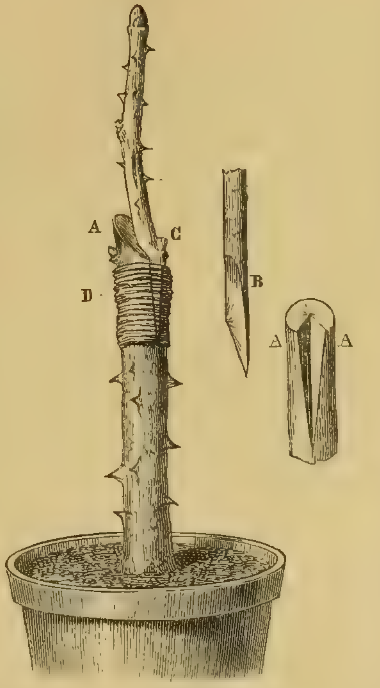


Fig. 18.—Cleft-grafting.

Cleft-grafting.—This mode of grafting, which is shown in fig. 18, is greatly patronised by French Rose growers. M. Lévêque, jun., of Ivry-sur-Seine, grafts from 15,000 to 20,000 stocks by this method every winter, which enables him to deliver thousands of new varieties in the spring. The stocks best adapted for this kind of grafting are the Manetti, the de la Grifferaie varieties, and young seedling Briers. In the course of the month of November the stocks are prepared by pruning the roots and the stems, the latter being cut down to the length of about 4 in. They are then planted in 4-in. pots in light, rather than heavy, earth. The best mixture for the purpose is one-third of dry mould, one-third of well-rotted night-soil, and one-third of heath mould or fine sand, the whole being well mixed up together. The soil is pressed well down round each stock, and the pots are placed in a cold house or under a frame, so that the roots may develop themselves. During the first half of January we begin grafting, continuing our operations through February, and using the young, tender shoots taken from the first grafts or from other Rose trees which have been previously placed in the greenhouse. In performing this operation, first cut the stock in a slanting direction at the top; then insert the point of the knife, as shown at A A on the right side of the figure (fig. 18), and draw it downwards on the right side towards the root in an oblique direction. Make a corresponding cut on the other side, so that the two cuts end in a point. The notch or cleft should be about $\frac{1}{2}$ in. in length, and ought to be made opposite to a bud, which is to be allowed to grow so as to draw up the sap to the top of the stock. The depth of the cut should be such as to allow the bark of the scion to come into contact with that of the stock. It should in no case penetrate as deep as the pith of the shoot, and should be begun level with the lowest bud. The scion itself should be cut so as to exactly fill up the cleft in the stock A A. It is a good plan to cut the scion so that the bud may be at about the middle of the length of the cleft. The eye will thus be out of the reach of accidents, and will, at the same time, promote the union of the graft and the stock. In order that the operation may succeed, it is necessary that the internal portions of the bark and alburnum of the graft should be in contact with those of the stock; if they be not so, the stock and graft must be cut even. The graft being in its place, it is kept in its proper position by the thumb and forefinger of the left hand, while the right is used to bind up the junction with coarse thread, as shown at D, fig. 18. The top of the stock, the head of the graft, and the junction are then covered with grafting-wax. These grafts are then placed under bell-glasses in the propagating house, or in small boxes fitted into the frames of the house and covered with lights, the temperature being kept at from 60° to 68° Fahr. by means of hot-water pipes. If a propagating house be not available, a bed should be prepared from 1 ft. 4 in. to 1 ft. 2 in. in thickness, and composed of one-half of stable litter and the rest of well-rotted loam and leaf-mould, which must be well mixed together as the bed is being made. When the operation is completed, the surface of the bed is trodden down; and if the stable manure be too dry, the whole must be watered after the frames are put in their places, the surface of the soil being covered over with a layer of old tan or light earth about 4 in. in thickness. At the end of five or six days, as soon as the material has become sufficiently heated, the frames are filled, the pots being placed very close together, but without being plunged in the tan.

Herbaceous Grafting.—Grafting is carried on in the same way during the second year, the only difference being in the choice of the cutting, which is either taken from the grafts made the season before or from plants grown in pots and previously placed in the propagating house in the month of November. During the latter half of the month of January we use shoots which have already somewhat advanced towards maturity. The slips are cut so as to have three buds on each, as well as two or three leaves on each petiole. These herbaceous cuttings are grafted on stocks which have been kept in reserve in the propagating house or under frames, and which should be in full vigour. The mode of grafting adopted during the first year is carried out in all its details, the only difference being that the graft is herbaceous, whence the name. It is necessary to keep these winter grafts in a damp atmosphere so as to favour their development. The suckers which grow up from the roots of the stocks must in all cases be removed, but the shoots thrown off by the body of the stem should be pinched off gradually, beginning at the bottom and working upwards towards the graft, and completing the operation when this latter is in full growth, when they may be pruned away, the intention being to promote the upward current and retention of the sap. Care must also be taken to prevent the grafts from being injured by frost by surrounding the frames with dry stable manure, and covering them on cold nights with straw mats, taking advantage of the middle of the day to give them a little air so as to prevent them from becoming too damp. The frames should also be protected with stable litter when the sun is too hot, or the glass of the frames may be painted over with limewash, and the watering should be moderate. When the grafts have struck well, and have shoots of 8 in. in length, they are transferred to a cool house or frame, where they are left to develop themselves until such time as a favourable moment for planting them out has arrived.

Grafting on Cuttings.—This method of grafting is carried out on the same principle as that described above, differing only in the fact of the stocks being unrooted cuttings. For this purpose we choose cuttings of those Roses which root easily and quickly, such as Jules Margottin, La Rosière, Jacques Lafitte, Pio IX., De la Grifferaie, and Manetti. The cuttings should be from ¼ in. to ⅓ in. in diameter, and cut slantwise into slips 2½ in. to 3½ in. in length. The others must be cut horizontally under the bottom eye, taking care to preserve the swellings or calluses of those which have any. It is on the upper portion of these cuttings that the scions are grafted, as shown in fig. 19. The scions, of course, are always thinner than the cuttings upon which they are grafted, and are generally cut from choice varieties of the Tea Rose, the grafting of which necessitates great care and much heat. An excellent way is to shield-bud the most vigorous branches of these Roses during the months of April and September, placing them sufficiently close to allow of their being cut as soon as possible, so that every shield-bud will yield a cutting that is less inclined to throw out shoots. The most favourable time for grafting on this plan begins in the middle of September and ends towards the middle of December. For the later operations it is as well to keep a reserve of cuttings, so that they may not be attacked by the frost. These operations have the advantage of being able to be carried out in a room or house during the frost, so that large numbers may be prepared in what would be otherwise a slack time. Before transplanting them definitely, they must be placed in sand or heath mould at the rate of eighty under each bell-glass, each frame holding ten bell-glasses. They must be attended to just in the same way as has been recommended for cuttings planted elsewhere. When once the scions begin to grow we must give them air by raising the frames or bell-glasses, taking them away entirely when there is no longer any danger of frost, that is to say, about the middle of March, so as to accustom the young shoots to the air. This greatly facilitates the planting out of the grafted cuttings, which should take place about the middle of May.

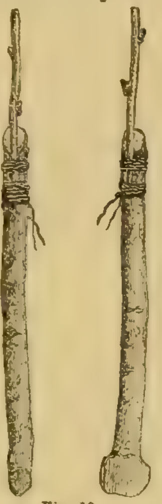


Fig. 19.
Graft without callus. Graft with callus.

J. Lachaume.

Autumn-blooming Roses.—A great deal has lately been written about autumn-blooming Roses. I doubt if any are superior, after frost has put in one or two rather severe appearances, to John Hopper and Duke of Edinburgh. In an open and exposed position here the Teas, although (Nov. 3) still covered with blooms, have none left that do not show the effects of last week's frosts in rotten outside petals and damp, sodden, rotting buds, while the two varieties just named are still producing buds and blooms of good quality which have not suffered from the excessive wet and frosts. Of course, however, no Roses are equal to Teas for autumn blooming so long as frosts and a superabundance of damp can be avoided.—J. E. Ewing, *Norwich.*

Rose Culture.—Being uninitiated in the art of Rose growing, it was with some misgivings that I procured last autumn about thirty half-standard trees, chiefly Hybrid Perpetuals, and planted them in my little garden. I dug holes about 1½ ft. deep, put a bucket of stable manure in the bottom of each, planted the trees, staked them, and (regarding the culture of Roses as a mysterious affair, not to be rashly undertaken) waited anxiously for the result. I have been, however, rewarded for the little trouble I took with a good display of Roses, both as regards quantity and quality, without a single failure. Either, therefore, my experience is exceptional, or nothing is easier than to grow Roses. One of my trees, Madame Bérard, a Tea Rose, deserves special remark; it was one of the first to bloom, has kept up all the summer a continuous display of exquisitely-tinted flowers, and has at this moment about fifteen plump and healthy-looking buds, some of them half expanded. Certainly no Rose in my limited experience can compete with this one.—S. Champ, *Bridport, Dorset.*

LONDON MARKET GARDENING.

Plants and Flowers for Market.

The houses in which growers for market cultivate their plants and flowers are generally span-roofed; light and airy, with a path running through the centre; as a rule, little attention is paid to painting and glazing in such places, what is done being performed when work is slack by men employed on the place. One grower never paints his houses after they are built. They are put up by his own workmen, painted two or three coats and in this state they remain, nothing afterwards being done, except putting in a few squares of glass when necessary. When worn out such houses are taken down and new ones built in their places. The best examples of plant houses I have seen in market gardens are those belonging to Messrs. Beckwith & Son, of Tottenham; they are span-roofed without rafters, the sashes in which the glass is fixed being of iron and placed at such distances apart as to admit a pane of glass 2 ft. wide. By being thus constructed every possible ray of light is taken advantage of, and to this may be attributed in a great measure the almost marvellous results in the way of culture obtained there. The heating apparatus in this place consists of seven powerful horizontal tubular boilers, each of which measures from 10 ft. to 12 ft. in length and 6 ft. to 8 ft. in width, and weighs nearly 9 tons. They were prepared from plans furnished by the proprietor, and are found to be more economical, powerful, and durable than those of more complicated construction. To these boilers are attached upwards of seven miles of 4-in. piping, and in ordinarily mild seasons they consume 600 chaldrons of coke and 250 tons of coal, besides an enormous quantity of breese, small coal, cinders, &c. Here, as elsewhere, no provision is made to have gravel walks or paved floors; these consist simply of the hard ground, upon which now and then a barrow-load of broken clinkers is thrown down to fill up holes where water might stand. There are between thirty and forty hands employed in this, one of the largest plant growing establishments near London, and each of these has, as a rule, his work regularly alloted to him, so that he knows exactly what to do and when to do it. Market gardeners always endeavour to secure good workmen, and keep them as long in their service as possible, frequent changes in such establishments being very inconvenient, as new hands require a long time to become acquainted with the work. Propagating is carried on with wonderful skill and rapidity, and a man well versed in such work is seldom out of employment. Everything done in such establishments is done at high pressure, everybody is in a hurry, and the work performed in one day in such places would surprise many a young gardener in a private establishment who thinks himself overworked. Some market florists have a few kinds of plants of which they make a specialty, and to these they devote the greater part of their time, which in a great measure accounts for the superiority of different market plants grown in such places over those produced where mixed collections are grown; some, however, whose ground is but of limited extent cover it with glass, and produce healthy marketable plants of various descriptions at all seasons of the year. The advantage gained by growing a variety of plants is, that a few van-loads fit for market can at all times be made up; whereas where only a few kinds are grown, blanks in the supply and consequently in the incomings often occur. In some of these places there are about twenty houses ranging from 60 ft. to 150 ft. in length, and every inch of space is utilised in the most profitable manner. I have known from a comparatively small place upwards of 100 dozen plants to have been sent to market weekly throughout the year. During the summer, when Heaths, Cytisus, and the more hardy kinds of plants can be placed out of doors, their places in the houses are occupied by Bouvardias, Ferns, Lycopods, and such plants as are disposed of in time to make room for the young plants in spring to come indoors. Bedding plants of different kinds are grown to fill up any vacant space that may occur in the houses, and these, being but a very short time on hand, add greatly to the profits of the place. One good illustration of a small market garden that requires but a comparatively small capital to start with, but from which a large profit may be made, I saw some time since at Tottenham. Indeed, it is almost astonishing how a man can meet the expenses attending the culture of fruits and plants for market and yet realise a fair livelihood by the proceeds from so small a place. The ground is attached to a small villa residence. and is not an acre in extent, but nearly the whole of the space is covered with glass. The houses are principally span-roofed, arranged side by side, thus saving the necessity and consequently the expense of building side walls to each house; only the houses at each end of the block have brick sides, the roofs of those houses in the middle of the block being supported by stout wooden planks from 12 in. to 15 in. wide laid on brick piers built at a distance of from 10 ft. to 12 ft. apart. Into these planks or wall plates the rafters of the houses are fixed. The eaves of the roofs are within 6 in. of each other, and by hollowing out this vacant space in the planks, an excellent and cheap trough is made for carrying off the water from the roofs into an adjoining tank prepared for the purpose. These span-roofed houses are about 60 ft. in length, 20 ft. wide, and sufficiently lofty to allow of a person working comfortably in them. A narrow path runs through the centre, and on either side, a few feet from the glass, are erected stout but rough wooden stages, on the top of which are laid a few inches thick of ashes. One doorway only is allowed to these houses, the space being far too valuable to leave more than one end of the house unoccupied. The wooden rafters in which the glass is laid are light, but of fair strength, and being from 18 in. to 20 in. apart, admit of large panes of glass, and thereby all the light possible. All building, glazing, painting, and, in fact, all the labour connected with the place, is performed by members of the family, and to this fact may be attributed to some extent the satisfactory results that are obtained, each having personal interest in the business.

Roses.

In the London markets, as in every town and village in England, the Rose, to whatever section it may belong, is considered the queen of flowers; even when there is not a great demand for other flowers, Roses can always be disposed of in large quantities. At Christmas and for several months afterwards if we want a Rose we get a Tea, and have to pay from 1s. to 2s. 6d. for it, but during June we get a beautiful Moss, Provence, or a Damask for 1d. Tea Roses of course yield the best returns to the grower, but there are near London men who, out of a very limited space of ground, grow sufficient Hybrid Perpetual Roses to gain for them a fair livelihood; whilst Moss Roses are considered one of the most profitable of outdoor crops.

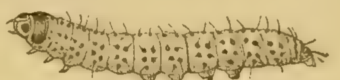
Tea Roses.—During winter and early spring the blooms of Tea Roses always find a ready sale at good prices in the market, and although large quantities are imported from France, English growers, by aid of cheap glass, &c., and improved kinds, are beginning to compete on favourable terms with the foreigner. Whilst it is true that Continental growers have the advantage of a warmer climate, which enables them to produce Roses early at little expense, yet they have the disadvantage of losing a day or two in transit, which, even in cool weather, takes some of the freshness off the blooms. The Covent Garden florists, moreover, want flowers at given dates, and these they can only procure at short notice from English growers who are within an hour's ride of the market. One of the largest growers of Tea Roses near London is Mr. Ladds, of Bexley Heath, who has several span-roofed houses 300 ft. long and from 35 ft. to 40 ft. wide filled with them during winter and spring. The plants are grown in good, sound, sandy loam in pots varying in size from 8 in. to 10 in. in diameter, the plants being trained in the form of pyramids by tying the main shoots to an upright stake inserted in the centre of each pot; in this way the plants have a neat uniform appearance, and do not take up so much space as if trained in any other form. Potting is usually performed in spring after the plants have ceased blooming, but very often they remain in the same pots for several years, unless their drainage becomes defective. If the houses are not required for other purposes during the summer, the Roses are allowed to remain in them, otherwise they are removed and arranged closely together in beds in the open air, kept well supplied with water at the roots; and in this way they succeed almost as well as when left under glass. One house of Tea Roses is, however, always retained for furnishing a supply of bloom during the summer and autumn. The principal varieties grown are Niphetos (pure white) and Isabella Sprunt (golden-yellow); these kinds are profuse bloomers; the flower-buds are large and perfect in shape; and as fully expanded blooms are never needed in the market, only kinds that will produce a large quantity of well-shaped buds are cultivated. From the middle of September till the end of May, the quantity of Rosebuds sent to market from this place averages from 70 dozen to 200 dozen every market morning. These are eagerly purchased by the bouquet makers, who pay from 3s. to 9s. per dozen for them according to the season and the supply in the market. Every afternoon preceding the market days a man goes over all the plants and cuts every bloom that is fit, placing them as he does so on a large shallow tray carried by a boy on his head. When all are gathered each bud has a piece of soft matting tied round its middle to prevent the petals from expanding and becoming injured. They are then carefully packed in boxes ready to be sent to market early the next morning. Some florists near London grow Tea Roses into enormous specimens in tubs or large pots, and others plant them out and train them over the roofs of houses; little pruning in any case is done to Tea Roses. Some growers have houses planted with them in which they are allowed to grow nearly wild, and the crops of flowers which they produce is marvellous. The greatest enemies Rose growers have to content with are mildew and green fly; the former is only kept in check by precautionary measures, such as dusting the hot-water pipes with sulphur when the plants are started into growth, and the latter by frequent fumigation, a healthy airy atmosphere, free growth in the plants, and frequent syringings overhead. In most nurseries Tea Roses are grown in some way or other, the plants themselves being often trained under the roofs of the houses in such a manner as to obstruct as little light as possible from the other kinds of plants which are grown beneath them. In other cases the plants are grown in large pots and trained up a series of trellises about 6 ft. or 8 ft. in height and from 3 ft. to 4 ft. apart. A pathway along one side of the houses admits of the blooms being easily gathered or the plants attended to. By this means the whole of the space is utilised most profitably, and the plants receive abundance of light and sunshine on all sides. Examples of Marechal Niel and Gloire de Dijon are the kinds usually found planted out in large houses, the branches being trained, as before stated, in lines along the roof. I have seen plants thus circumstanced that had been planted only two years which have made over 35 ft. of growth each, some of the shoots being as thick as a good sized walking-stick, and bearing hundreds of blooms. Such kinds as Mrs. Bosanquet, Devoniensis, Madame Falcot, and Lamarque are highly esteemed by some growers; they are all excellent kinds in the bud state, but for general purposes there are no Tea Roses at present grown for market which equal Niphetos and Isabella Sprunt. Mr. Ladds, to whom reference has already been made, used formerly to grow large quantities of Marechal Niel, but he now scarcely grows it at all. C. W. S.

GARDEN DESTROYERS.

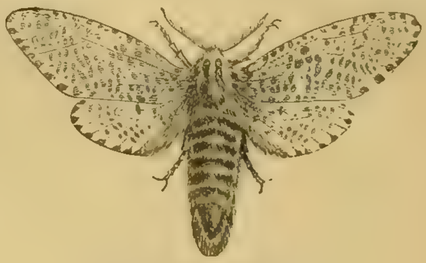
THE WOOD LEOPARD MOTH.

(ZEUZERA ÆSCULI)

This beautiful and delicately-coloured moth is fortunately not very common in this country, as its caterpillar is very destructive to many cultivated trees and shrubs by boring into their stems and branches, and making in them long galleries in which they live, feeding upon the wood of the tree. In time the branch so bored dies, or is so weakened that it is easily broken off by the wind. As the caterpillars frequently do not attain their full size until the third year, they have plenty of time in which to do considerable mischief. The trees which are particularly liable to the attacks of these insects are the Apple, Pear, Quince, Holly, Lilac, Privet, Ash, Mountain Ash, Elm, &c. As the caterpillar spends the whole of its existence within the branches, it is very difficult in any way to reduce their numbers. When a branch begins to wither it should be carefully examined, and if a hole is found in the bark round which there are small, sawdust-like particles of wood, and some of their droppings, the branch should at once be cut off to prevent the caterpillar doing any further mischief; care must be taken, however, that the branch should be cut back far enough to render it quite certain that the caterpillar is not left behind in the tree. The portion cut off should then be split open and the caterpillar found and destroyed. If the caterpillar is in the stem of a tree, or in such a position as to make it impossible to cut the bough off without injuring the tree, its hole may be somewhat enlarged with a knife; and if it cannot be reached in this way, a wire may be introduced into the hole, a good thrust from which would kill the caterpillar. The perfect insect should of course be killed whenever it may be found. The female moth is furnished with a very strong ovipositor, with which she deposits her eggs in the bark of the various trees. The eggs are round and orange coloured, and are laid at the end of July or beginning of August; the caterpillars are soon hatched, and live at first between the outer and inner bark; as they grow stronger they work their way into the wood of the tree. They do not increase much in size until the following spring, when they begin to grow rapidly and increase in size until May in the next year, when they are generally full grown; they then leave the woody part of the branch, and form a thick web under the bark, in which they assume the chrysalis state, and from which they appear as perfect insects in July or August. The moths are particularly elegant insects; the females, which are considerably larger than the males, are about 1⅛ in. in length, and measure about 2¼ in. across the wings. The markings of both sexes are alike, but the males may easily be distinguished from the females by their antennæ, which are black and deeply pectinated or toothed, like a comb, on both sides in a most beautiful manner for half their length from their base, and the upper half deeply notched; whilst those of the females are slender, clothed with a whitish down towards their base, and to the naked eye appear quite smooth. The females are also provided with a projecting, brown ovipositor. The head and thorax are covered with a very thick white pile, the latter having three black spots on either side of its centre; the body is thickly clothed with a black down, each joint being fringed with white. The wings are long and narrow, and are white and almost transparent, with yellowish-brown veins, and a row of rounded, bluish-black spots between every two veins; the eyes and legs are black, each joint of the latter being fringed with white. The caterpillar is about 1½ in. long when fully grown, and is of a yellowish-buff colour. The head (with the exception of the crown, which is lighter), a shield-shaped spot on the first joint of the body, and various round spots on the other joints, and the upper part of the last joint are black; the round, black spots on the body are raised, with a fine, short hair growing from each. The mouth is provided with a strong pair of jaws; the body has twelve joints, the first three bearing a pair of small, black legs, the sixth, seventh, eighth, ninth, and last joints also bearing legs. The chrysalis is brownish-yellow, except at the ends, which are dark brown. S. G. S.



Caterpillar of Wood Leopard Moth (Zeuzera æsculi).



Wood Leopard Moth (Zeuzera æsculi).

Plant Vagaries.—In a lecture delivered on June 17 last, before the members of the College of the Sorbonne, Paris, by M. Alphonse Lavallée, Secretary-General of the Central Society of Horticulture of France, and possessor of the magnificent and altogether unequalled collection of shrubs and trees at Segrez, he mentions the following facts that may be interesting to the readers of The Garden: 1. That the Liquidambar styraciflua in his arboretum, when planted as a single specimen, never exceeds the dimensions of a bush, but that when several of them are planted close together, so that in fact they almost crowd one another, they will all of them attain the dimensions of a small tree. 2. That shrubs and underwood generally will thrive and flourish when planted under Beech trees, but will not even live when planted under the shade of the Walnut. 3. That Nettles will only thrive in the immediate vicinity of human habitations, and that when these are removed the Nettles, which used to abound, almost immediately afterwards disappear also from the locality, but that, on the other hand, no member of the Orchis family seems able to exist in the immediate vicinity of man's abode, as particularly in Switzerland, when peasants' cottages are built on spots where these plants are plentiful, they all quickly disappear and cease to grow. He gives no reasons for these curious likes and dislikes, but merely states the facts as they have come under his notice. M. Lavallée, who is also Treasurer-General of the Central Agricultural Society of France, has also recently published a pamphlet, addressed to the members of that Society, recommending as a stock whereon to graft Vines that will not possibly be liable to the ravages of that dreaded Vine pest the Phylloxera vastatrix, the species of Vine which are indigenous to the different parts of Asia, where this pest is altogether unknown, in the hopes that as silkworms, which live and thrive on the leaves of the White or Paper Mulberry, will not touch those of

Morus nigra or Black Mulberry, so the Phylloxera may also not like the roots of the Asiatic species of Vine. The experiment is at all events worth a trial.—W. E. G.

NOTES OF THE WEEK.

Sonerila Hendersoni.—This winter-flowering plant and its varieties (six in number) now rank amongst the most attractive occupants of stoves in the London nurseries. Their foliage is richly marbled and shaded with silvery-bronze, whilst their flowers, which run through all shades of violet, mauve, and pink, are produced in great numbers. They are well adapted for growing in pans, baskets, or vases; and even in 3-in. pots, handsome, bushy, little plants of them may easily be had. Grown in the latter way, a number of plants, some of which bear over thirty spikes of blossom, form an attractive fringe to Palms, Dracænas, and other fine-leaved plants in one of the houses in the Pine-apple Nursery.

Three Good Autumn-blooming Plants may now be seen in Mr. Parker's nursery at Tooting. They are arranged in a long line, and consist of a dwarf Pampas Grass, and the late-flowering Tritoma grandis (planted alternately), edged on both sides with long lines of the purple-flowered Aster Amellus. The plants of the Pampas Grass are each furnished with numerous plumes, whilst the showy blooms of the Tritoma, which are borne on stout spikes, are produced in large numbers, and more are still being thrown up from the bottom. Planting in lines is not always desirable, but there are many other ways in which such plants might be arranged effectively.

Seaforthia elegans in Flower.—A fine specimen of this Palm has been in flower in the large conservatory in the Royal Botanic Gardens, Regent's Park, for several weeks past. Whether it will ripen seeds or not is uncertain, as it is rather late in the year; but a short time ago a specimen of this Palm flowered in the gardens at Endcliffe Hall, Sheffield, and is now ripening a crop of seeds. The same plant flowered last year, and a fine stock of young plants from the seeds was obtained.

Dicentra formosa.—This forms an excellent border plant during summer and autumn. It resembles the kind known as D. eximia, but is of a stronger and hardier habit of growth. It also flowers more freely, and its blossoms are larger and of a brighter rose colour. It forms an excellent band to a shrubbery, or isolated clumps of it in raised positions produce a good effect. We lately saw a long line of it in Mr. Parker's nursery, where, backed up by a row of variegated Cornus, it had a fine appearance. In the rich, deep soil of the Tooting nursery it grows with great freedom, and flowers successively for several months. Its blooms are useful among cut flowers, and its leaves may be used in like manner as a substitute for Ferns.

Helleborus altifolius in Pots.—This fine early-flowering Christmas Rose makes an admirable pot plant in November. We lately saw it treated in this way in Mr. Ware's nursery at Tottenham, in which one plant in a 10-in. pot bore upwards of 100 buds and blossoms. Such plants may be obtained either by growing them continually in pots, or by planting them out during summer and lifting them and potting them in the autumn. It is a good plan to put a sheet of brown paper round the plant when the bloom-buds appear, allowing the light only to fall on its top. This brings the flowers well up among and above the leaves, which, if the plants be wanted for conservatory decoration, is very desirable. Under this treatment, too, the flowers come whiter than when exposed to very bright sunshine. This Hellebore might also be made to form an effective feature in the conservatory if planted in quantity in the autumn, so as to form an undergrowth to Palms, standard Chrysanthemums, and similar plants.

Bananas at Wimbledon House.—The finest cluster of Bananas we have ever seen, and perhaps the largest ever grown in England, may now be found in the gardens at Wimbledon House. From the same place, some few years ago, Mr. Ollerhead exhibited a cluster which weighed 97 lb., said to be the heaviest of this sort on record; and it is expected that that alluded to above will considerably exceed this weight. The kind grown is Musa Cavendishi, which, on account of its dwarf habit, is the best for small houses. The plants are growing in a raised bed in the middle of a span-roofed house, in good, rich, holding soil. A little bottom-heat is given, as are also copious supplies of water; indeed, if the plants be even once allowed to become dry, failure will be the result. The plants now bearing fruit were planted out last February, and consisted of medium-sized, strong suckers taken from the bases of old plants. Their stems are now at least 20 in. in circumference. The fruit will be ripe in January next, and from the base of the plant several suckers are encouraged to grow to supply the place of the old plant, which, after the fruit is ripe is cut down, and the young plants afford another crop of ripe fruit in July or August next. When the July fruit is cut, the old stools are lifted, the beds re-made, and fresh suckers are planted. Thus, in twenty months from the time of planting, two good crops of fruit can be obtained. It is always best to have the bed parted off into square portions, in order that the plants may be brought on or planted in succession, as occasion may require.

Large Brugmansia arborea.—Mr. John Luscombe has sent us a section of the stem of a plant of this Brugmansia lately cut down in his conservatory at Combe Royal, near Kingsbridge, which measures 25 in. in circumference. The wood appears to be of no value, but the section in question serves to show the size which this Brugmansia will attain when growing under favourable conditions.

Lapagerias as Standards.—Few plants are better adapted fo covering umbrella-shaped trellises than Lapageria rosea and its white variety. The flowering shoots can be tied so as to hang loosely and gracefully from the trellis, a position in which they can be seen t better advantage than when trained over balloon or pyramidal shaped trellises, on which we too frequently see them; moreover, as standards they can be employed in the conservatory to better advantage than in any other form, inasmuch as they allow of other plants being placed beneath them. We lately saw some very large specimens in flower thus grown in Messrs. Veitch's nursery, Chelsea.

Chrysanthemums at Chelsea.—There will shortly be a fine display of Japanese, incurved, and Pompone Chrysanthemums in Messrs. Veitch's nursery, Chelsea. The plants, which have this year been grown more bushy, in order to secure a quantity of bloom rather than a few fine flowers, are arranged in a large span-roofed house, which will, in a week or ten days, be most attractive, as far as a show of flowers is concerned. All the best of the old, as well as many valuable new kinds, are here represented; and they will, in addition to producing a brilliant display, afford a good opportunity for selection.

Fast Budding of Fruit Trees.—Very few who are unacquainted with the art of budding will believe how rapidly it can be performed by experts. Some twenty years ago, when I first commenced the nursery business, it was thought that a man who budded 2000 Peach trees in a day was very expert, and if he did more than that he must slight his work. The number has been gradually increased, until now we can find occasionally a man who can bud 5000 trees in a day of ten hours. The largest amount I have ever heard of was done by our men the past season. My brother and two young men in our employ, with three tiers, six in all, budded and tied 40,800 Peach trees in three days of ten hours each. I have occasionally heard of a large number set in one day, but this is the largest number I have ever known budded in the time.—C. J. Black, in "Gardeners' Monthly."

Aster grandiflorus for the Conservatory.—This, one of the latest-blooming kinds of Michaelmas Daisy, is well adapted for lifting and flowering in pots in the conservatory. Its large flowers, which are of a very showy bluish-purple, supply a colour wanting in Chrysanthemums, and well-grown bushy plants of it would greatly enhance the effect of a mixed collection of Chrysanthemums, scarlet Salvias, and similar plants used for autumn indoor decoration. We lately saw fine, bushy specimens of this Aster in Mr. Parker's nursery, Tooting, just opening its bloom buds, and which, if lifted, would be well fitted to the purpose alluded to. Associated with this kind were also in flower Aster terminalis, A. paniculatus, A. Novæ Angliæ, the dwarf A. discolor, and A. ericoides.

"Art" in the Garden.—Our friend Mr. Meehan, of Germantown, has a sensation in his November monthly. In the description of a garden we read that "on both sides of the main drive is a broad expanse of lawn, unbroken by tree or flower bed, and of a verdure unexcelled; on each side of the same drive is a mammoth ribbon line bed, running a length of 800 ft.—the effect of these beds, when I saw them in the light of an August afternoon, in contrast with the velvet-like lawn, is something never to be forgotten, and it is doubtful if in all the experienced art of Europe they have ever been surpassed. One bed is described as containing 50,000 plants." We are, however, not very sorry that an ocean divides us from these "fine effects."

At the Royal Horticultural Society's meeting next Tuesday there will be a fine display of Chrysanthemums from Messrs. E. G. Henderson and other noted growers, and a good exhibition of vegetables is expected in competition for the prizes offered by Messrs. Carter, Sutton, and Hooper. Messrs. Veitch & Sons will, by special request, again exhibit an extensive collection of winter bedding plants similar to that which excited so much interest at the last meeting.

NOTES FROM KEW.

Hardy Plants.—The most stately of all the plants belonging to the Natural Order Lilaceæ are the Yuccas, some of which assume an arborescent habit, and afford a style of beauty peculiarly their own. Most people know the common Adam's Needle (Yucca gloriosa), but the variety glaucescens, which we now note, is not frequently met with. It has the habit of the type, but its leaves are very glaucous; like the common one, it produces its large and handsome panicles of whitish flowers at almost any season. Phlomis ferruginea, a handsome, shrubby Labiate, nearly allied to the Jerusalem Sage (Phlomis fruticosa), is a very desirable South European plant, which is quite hardy in this country, at any rate in the southern counties; even at the present inclement time of year its large, orange-yellow flowers are in full beauty. The very much wrinkled leaves are densely covered with beautiful, star-shaped hairs.

Greenhouse Plants.—Justicia speciosa, an Indian Acanthad, is now gay with its pretty purple blossoms; either for the greenhouse or stove this easily-cultivated and free-flowering winter decorative plant is very useful, and is well worth growing. Muraltia Heisteria, a native of the Cape of Good Hope, is a rigid shrub of Gorse-like habit, thickly studded over with small, purple, Pea-shaped flowers; this pretty plant remains continuously in flower for several months. Begonia natalensis, another South African plant, flowers well in a young state; it has neat, light green leaves, white flowers, and is of good habit. Cyrtanthus McKinni, a very lovely Amaryllid, from the Cape of Good Hope, has long, narrow, dark green, Grass-like leaves and scapes about 1 ft. in height, bearing umbels of long-tubed, white, deliciously-fragrant flowers.

Exotic Grasses.—The Batavian Sugar Cane (Saccharum violaceum) is a decidedly ornamental stove plant; the glossy leaves are purplish and the entire foliage is tinged with purple. Reana luxurians or, more properly, Euchlæna luxurians, a noble Grass from Venezuela, is now in flower, probably for the first time in this country. It is a tall plant with a superficial resemblance to Indian Corn, and, like it, produces its panicles of male flowers at the summit of the stem, and the female spikes in the axils of the stem leaves. Much is expected from this as a forage Grass; and although it has failed somewhat in some places where it has been tried, many Indian planters speak in the most hopeful terms respecting it, as a single good tuft will afford sufficient food for a bullock for an entire day. Some of the Kew specimens are from 10 ft. to 15 ft. or more in height. Gynerium saccharatum, another Grass from Tropical America, makes an extremely handsome specimen plant where sufficient room can be afforded it; it has tall, Reed-like stems 12 ft. or 15 ft. high, and long, plume-like panicles of whitish flowers. A South European species, Arundo mauritanica, does well out in the open air during summer, provided it can command an unlimited supply of water. Under these conditions it gives us a very fine sub-tropical effect. In the old Lily house, the grand feathery panicles of this southern Reed, borne on stems 8 ft. high, are very beautiful.

Stove Plants.—Randia longiflora, a remarkable shrub or small tree from Sierra Leone, is a near relation of the Gardenias; the large flowers—the tube of which is nearly 1 ft. in length—are creamy-white, with the exception of a red patch behind each of the five stamens. Aphelandra Sinitzini, recently introduced from Peru by Linden, of Ghent, is a noble plant with large, leathery leaves, polished green above and purple beneath; the flowers, produced in fine spikes, are a splendid vermilion. A. Porteana, from Bahia, is another very showy and free-flowering plant, with spikes of very rich orange-scarlet. Anthurium candidum, introduced two or three years ago from Columbia by Mr. Shuttleworth when collecting for Mr. Bull, of Chelsea, is a charming and elegant stove Aroid; the peduncles, somewhat longer than the oval lance-shaped green leaves, are surmounted by a snowy-white spathe.

Orchids.—During the past few years a large number of Masdevallias have been introduced, and our gardens have been enriched by lovely cool house epiphytes, many of which are as remarkable for the peculiarity of the shape and structure of their blossoms as for their exceedingly rich colouration. Several are, at present, in flower at Kew. Of M. Veitchiana, first discovered by the late Mr. Pearce in the Cordilleras of Peru, Sir J. Hooker says, "In point of colour it is not only one of the most beautiful, but most singular of Orchids; for the vivid hue of the flower is due to the whole inner surface of the petals being studded with minute papillæ of a brilliant cadmium-yellow colour; these are largest and most crowded where the colour is deepest." M. ignea is a near ally of M. Veitchiana, and was originally imported from New Grenada in March, 1870, and sold at Stevens's Rooms. Professor Reichenbach, in describing it, says that the blossoms are "dazzling scarlet mixed with orange-scarlet; too dazzling to look at long." M. Harryana, introduced by Wallis from New Grenada in 1869, has blood-red flowers, the sepals forming a yellow tube. Oncidium excavatum is a tall-growing and very free-flowering kind, with bright yellow blossoms, stained with brown near the base of the lobes of the lip. Sarcanthus laxus, a most floriferous and neat-growing little epiphyte from Moulmein, bears numbers of drooping spikes of small, but pretty flowers, the deep purple lip of which renders them conspicuous. The long-stalked, drooping spikes of the rose-coloured blossoms of Mesospinidium sanguineum are very charming, are freely produced, and last a considerable time in perfect condition. Liparis spathulata and L. pendula, both from India, make up in number of flowers and grace and elegance of habit for the small size of the individual blossoms; in colour these are greenish, but are borne in great profusion in drooping spikes. Their somewhat disagreeable odour is, however, a slight drawback. Dendrobium bigibbum, with its rich purple flowers, is certainly one of the most handsome of the Australian Orchids, and D. aqueum, with its long, leafless pseudo-bulbs studded with blossoms (pure white, with the exception of the base of the lip, which is tinged with primrose), is not one of the least lovely of the Indian kinds. —†

NOTES FROM AMERICA.

A FRIEND of ours who cultivates hardy plants in a remote corner of the New World sends us the following: Your horticultural journals should keep an American editor. I do not see how you manage to get so persistently wrong on American plants. Scarcely any of you mention an American native plant but what you get as far out of the way as the secular journals do when they touch our geography, politics, or social matters. What an amusing story you are telling about Clematis Pitcheri. No living mortal ever saw it in the country where it grows with a flower anything but purple, and a dull purple too. Then the "Revue Horticole" made matters worse by a coloured plate with scarlet flowers, about half or less the size of C. Pitcheri. One of your correspondents speaks of Panicum virgatum as growing 3 ft. high. A clump within fifty yards of where I write is taller than I, and I am 5 ft. 11 in. (or, as Pat said, 11 ft. 5 in.; I have forgotten which), and it tops me. Another writes of Andropogon furcatus as "graceful." We look upon it as the emblem of meanness. It will doubtless do in a botanic garden, but pray do not encourage people to plant it by calling it "graceful." Pray what can you have as Helianthus divaricatus that it should be called "fine?" It is just about as "fine" as a Jerusalem Artichoke and other coarse Sunflowers. If you wish for fine Sunflowers, take H. orgyalis or H. Maximiliani, and I will agree with you. One of your correspondents commends Bocconia cordata. It may behave differently with you, but here it is one of the worst nuisances ever introduced. It runs and comes up everywhere in the lawn. Another "spreader" is the Kentucky Coffee tree (Gymnocladus canadensis), about which Mr. C. M. Hovey writes so enthusiastically. My soil is very sandy, and this comes up from the root in a promiscuous manner. Still, what Mr. Hovey says otherwise is to the point, but I think I have found fault enough to show the need of an American censor. If you make me an offer, let it be a large one. G. T.

[The Clematis, as it flowered in the Garden of Plants, most certainly had red flowers. Perhaps it is another species, or a distinct-coloured variety. Panicum virgatum is not one of the Grasses that has received kind treatment in our gardens, and we have never seen it so high as the plants mentioned by our American correspondent. Grasses are much influenced as to stature by soil and climate. What does our correspondent say to the other side of the question, as illustrated by such notes as this, which we cut from Vick's useful magazine? An American writes thus from Derby: "I will send a root or two of real English London Pride. Have seen both London Pride and Lychnis in the same garden, which goes as further proof of the truth of your statement, Lychnis is not London Pride, as some Americans claim."]

Nurserymen's Exhibits at Paris.—The following will give some idea of the extent of nurserymen's exhibits in the grounds of the Paris Exhibition. Passing recently through that portion of the gardens set apart especially for the above I noticed the following exhibited by one firm alone (that of Leroy, of Angers), viz., Apples, 492 varieties; Pears, 813; Plums, 153; Cherries, 131; Peaches, 145; Apricots, 43; Almonds, 18; Quinces, 10; Figs, 31; Raspberries, 30; Currants, 40; Strawberries, 102; Conifers, 310; Evergreen shrubs, 500; climbing plants, 125; plants especially adapted for peaty soils, 50; and deciduous trees and shrubs, 600, making a total of 3593 varieties. The whole were arranged very effectively in beds and borders, and, owing to their being crowded together, they could be easily examined by any one who wished to do so, each specimen being a very fair representative of its kind.—CHARLES DENNIS' *Southwark Park.*

THE KITCHEN GARDEN.

AERATING THE SOIL.

I ENTIRELY agree with all that Mr. Cornhill has said (p. 424) respecting the ridging of ground in winter or leaving it alone. Our soil here is of a stiff, retentive nature in winter, but bakes and burns in summer; and if it be stiff and lumpy in the spring, or run into a state akin to the consistency of clay with excessive moisture, it becomes almost impossible to crop it fitly or to reduce it to a pulverised condition. Ridging will do good if it be done whilst the soil is fairly dry in the autumn; but if the operation be left until it has become saturated with wet, then it will turn up in huge lumps, and in lumps it will remain unless severe frosts pulverise it. I would often like to have my uncropped ground neatly dug or forked over in the autumn, or during open weather in winter, but if I did have it so worked and a week or two of rainy weather succeeded, it would then look very much as though it had been rolled, and would run together in such a way as to make moving it in the spring heart-breaking labour. Where it cannot be ridged and it is intended to dress it with stable manure in the spring, it is far the wisest plan, even at the risk of being thought untidy, to leave it untouched, weeds and all, for the winter, and let the worms do the work of aërating, which they will perform much more effectually than human labour can. When it is purposed to grow Potatoes—our staple crop here—with patent manures, I like to turn up the soil in ridges from 2½ ft. to 3 ft. in width, and to allow it to remain rough and unkempt for the winter; then in the spring, when the soil has become fairly dry, have the furrows forked over, draw shallow drills with a hoe, plant the tubers, dress with the manure, and fork down the pulverised soil from the sides of the ridges to cover the seed. The remainder of the ridge can then be forked down at leisure either before or after the Potato plants appear. Planting of all kinds of hardy flowers, such as Primroses, Polyanthuses, Pansies, &c., that should be done in the autumn, and in some cases must be, let the result be what it may, is, nevertheless, best done in the spring, as the rains of winter cause the particles of the soil to run tightly together, the roots are fixed as in a vice, and in the heat of summer the soil is baked so hard, that it is almost impossible to get it clean and usable. It is an undoubted axiom that the wetter the soil in winter the more will it bake in the summer; whilst a dry soil in winter, if it be of average depth, will be the coolest in summer. The more the soil is pulverised, the more the surface is disturbed and made fine, the more retentive is it of moisture; and, except when the winter has been severe and the frost has thoroughly entered the soil, the highest condition of pulverisation is found when the worms have had undisturbed action, and the ground has lain untouched till March, or until dry weather prevails. Recent winters have rendered the ground more difficult to work in the spring than was formerly the case. Then several weeks of severe frost did a large amount of good; now, mild winters and heavy rainfalls keep the weeds growing, render the ground close and heavy, and leave slugs, snails, and other pests in undisputed sway. I heartily recommend all who have stiff, clayey soils to cultivate to be careful how they move them in the autumn, lest they do more harm than good. A. D.

MEDIUM-SIZED TABLE POTATOES BEST.

THE size to which Potatoes shall be grown has been much governed by the supposed requirements of the exhibition table, and as long as mere size or bulk were favoured, so long did growers regard such tubers as the best to produce. But of late there has been a tendency towards medium size, allied to handsome shape and pleasing outline, and, in spite of some occasional misjudgment, there can be no doubt that the general taste now favours such tubers, and is disposed to regard them as presenting a good idea of a table Potato, whether for show or consumption. It is an acknowledged axiom that Potatoes are grown to be eaten, and this is so far indisputable, although at present not a few are grown for exhibition. But Potatoes are only exhibited with a view to encourage the growth and production of handsome, even kinds for the table, and, therefore, if some do not reach that destination, their exhibition tends largely to promote the growth and consumption of others. Potatoes being grown to be eaten, and as it is the usual English custom to cook them in a whole state, the question may well be raised, What is the best and most desirable size to aim at? Perchance many people are indifferent as to the average size of their table Potatoes provided they can obtain plenty for consumption; but this is hardly a view that will commend itself to those who have made the cultivation of the Potato a matter of interest and importance. Relative size, too, often means relative quality; and as a cooked Potato is an abomination if not good, so does it follow that the better it is the more enjoyable and pleasing to the consumers will it be. Tubers of neat, medium size, that is, weighing about four to the pound, come nearest to my estimate of a table Potato; but these would hardly meet the requirements of Potato judges, who yet look for sizes varying from 6 oz. up to 10 oz., and in a recent prominent case of judging tubers from 12 oz. to 14 oz. were put into the highest place, not because they possessed good quality, but because there was bulk, and the size was in accordance with the known character of the variety. Now, I hold that Potatoes should never be sent otherwise than whole to table, and to have this desideratum only even tubers of a medium size could be used. Potatoes cut before cooking never boil so evenly, nor look so well when dished up, nor have such excellence of flavour as have smaller whole tubers; and further, whilst the outer surface of the peeled Potato does nicely flake and present the mealy character that we all so much admire, the cut surface of the halved Potato never does. But there is more than this; large tubers contain a larger proportion of water in their composition; small tubers contain less. The nutritious properties of the tuber are found in the latter in a more concentrated form, and then a less bulk of such food suffices. My preference in point of flavour is decidedly in favour of kinds that have flesh much tinted with yellow. Many white kinds, such as Regents, Victoria, Dawes' Matchless Kidney, Snowflake, &c., will boil mealy and as white as snow, but there is not that piquancy of flavour that is found in the yellow-fleshed kinds. These latter, however, predominate amongst home-raised sorts, and, therefore, there are perhaps more really good-eating Potatoes than is generally believed. White is the prevailing colour of flesh of the American kinds, Brownell's Vermont Beauty being almost the only exception, and this is probably one of the best of that large section, when cooked. On the other hand, with us, starting with that old and favourite Kidney, the Ashleaf, we get yellow tints predominating, as is seen in such other delicious table kinds as the Lapstone, Early Market, Rector of Woodstock, King of Potatoes, Radstock Beauty, Blanchard, Grampian, Scammell's Glory, Woodstock Kidney, Covent Garden Perfection, &c., a few representing scores of Potatoes of the finest table quality having yellow-tinted flesh. Of all the kinds here named none gives large tubers, except under gross cultivation. All are garden kinds, and just such as should be placed upon a gentleman's table. That we are not retrograding in the production of quality in new sorts, Mr. Fenn's Woodstock Kidney affords evidence; it is a most delicious table kind. And only just now I have discovered in a kind I have grown for two years, but not previously tasted, a veritable table gem than which I have not seen a more tempting sample when dished up than it is. It is a kind originally received from the west of England, and is known as Gloster Red. The skin is netted, of a dull purplish-red, with blotches of white; in shape it is flattish-round, and, although the tubers are not large, it is a great cropper. I think, in all my experience, I could back this kind when cooked against any Potato in cultivation, excepting, perhaps, Woodstock Kidney. If growers would be content to get less bulk with the large kinds, no doubt the table quality would be improved. "Multum in parvo" is an excellent motto for a good but medium-sized Potato, and those who have tasted really good ones will turn with repugnance from those tubers that have nothing but size to commend them.

A. D.

Late-sown Scarlet Runners.—Mr. Legge's experience with late crops of these Beans (p. 423) is unfortunate, but he should not on that account condemn the practice of late sowing generally, as many can bear testimony to the value of late crops of Scarlet Runners, especially those who have to supply large establishments with every vegetable luxury that is procurable, whether in or out of season, and with whom a continuous supply of Beans is as necessary as Potatoes. It is useless in cases of this kind to allude to the amount of nutrition contained in any given vegetable, as it is the demand that one has to satisfy; that overrules all considerations regarding individual taste. During autumn and winter, doubtless the Haricot would carry off the palm respecting nutritive qualities, but, nevertheless, the green pods are much more in demand, just as green Peas are preferred to dry ones. Your correspondent draws too gloomy a picture of our English climate, as here, during the whole of October, we had an abundant supply of both Runners and French Beans from the open air, excellent both in quantity and quality; and, far from thinking it a waste of seed and labour, I should decidedly adopt the same practice in future. Moreover, I would recommend any one similarly situated to follow the same course, as they will (unless exceptionally unfavourably situated) be well satisfied with the result. To make one sowing of vegetables that are in such continuous demand as Scarlet Runners, and when the supply from these fails, calling the season for them over is not, I feel sure, likely to meet with general approval.—J. GROOM, *Linton Park, Maidstone.*

ANSWERS TO CORRESPONDENTS.

Acacias as Window Plants.—Will the Acacia thrive in an ordinary sitting room? Does it require any particular treatment? The leaves are falling off, though they are not dead.—W. G. [Acacia lophantha the kind alluded to, now so much used for decorative purposes, is one of the easiest of a proverbially easy family of plants to grow, but all of them are liable to the attacks of red spider which quickly destroys the vitality of the leaves and causes them to fall off. A deficiency of water would have the same effect, or, if grown in a house where gas was used, especially in apartments underneath but connected with the room in which the Acacia was placed, the plant would also suffer. If affected with red spider, damp the leaves and dress them over thickly with flowers of sulphur, especially the undersides, and allow it to remain on for a week, when it should be washed off, keeping it from getting into the soil.—T. BAINES.]

Wintering American Aloes.—Could the ordinary American Aloe be safely trusted out-of-doors in an open shed for the winter? or is it important to take it into a greenhouse or conservatory? I have two plants, one the ordinary form and the other variegated, and thought of putting them into an open shed, and covering the pots in which they stand with dead leaves. Would this be a safe proceeding?—L. K., *Surbiton.* [The American Aloe will only live, without protection, in the Channel Islands and in the most favoured parts of the south of England. It will be best, therefore, to winter your plants under glass.]

Canadian Wonder French Bean (p. 429).—This should be grown by all requiring forced French Beans. If planted out in well-heated pits with plenty of room, quincunx fashion, 1 ft. apart, and stopped occasionally, the result will be an abundance of fine, well-nourished, succulent Beans, much better than the best pot ones, however well grown, and this the whole winter through, whilst half the quantity compared with other varieties will make a dish. To plant thickly is to court failure as, doubtless, many have done. For summer crops, all those who have not done so, should try the effect of placing sticks to the rows as is done in the case of Peas or Scarlet Runners. This was accidentally discovered by a few plants helping themselves to the sticks of an adjoining row of Peas, and bearing much more abundantly than usual.—W. C. *Blenheim.*

White Azaleas in the Open Air.—In reference to the question relative to these living in the open air (p. 430), I may mention that we have some here in open beds that have evidently been out-of-doors for several years. Being in an elevated position, however, vegetation does not suffer from frost so much as it does in low-lying parts, but a few miles off and soil has also much to do with hardiness. A plant, therefore, may often be hardy in one place and tender in another. Here we have Myrtles, Azaleas, Aralias, Camellias, Chamærops excelsa and humilis, Colletia cruciata, and numerous other plants flourishing in the open air that will not thrive even a few miles off. The plants named above are not only such as have withstood the last few mild winters, but such as have been out of-doors for a good average term of years.—J. GROOM, *Linton Park, Maidstone.*

Forcing Seakale.—How soon ought Seakale bought ready for forcing to be covered after planting? and will bell-glasses do for forcing it as well as Seakale pots?—M PARIS [It should be covered immediately after it is planted. Neither Seakale pots nor bell-glasses are necessary. Of course you know that the old way of carrying out the manure to the Seakale plot is not now practised in good gardens. On the contrary, the Seakale is carried to the heating material, as yours must be. In the London market gardens a frequent and easy way now is to plant it in a trench, about 3½ ft wide in which has been placed some stable manure and leaves, a few hoops and mats being thrown over this, and the whole covered well at the sides with good stable manure, and the top with straw. The roots are planted in the trench in lines a few inches apart. This saves the cost of the Seakale pots, &c. At Frogmore Seakale is forced in a raised brick trench near one of the houses, using stable manure; in fact, it may be forced in a variety of ways almost anywhere there is heat and darkness. As in every place, however, it is best to use the appliances at hand, the best way, perhaps, will be for you to put some of it in one of the little chassis which the French plunge so snugly to the rim in stable manure. There it would do admirably, some Cocoa-nut fibre or some light earth being placed over the crowns, and some litter thrown over the chassis day and night of course. It would, no doubt, do well, though, perhaps, not so quickly in the caves where the Barbe de Capucin is grown so well for the Paris market. Seakale is a plant quite as hardy as Chicory, the roots of which afford Barbe, and, judging by the free, clean growth of this as seen in the Paris markets, under the same conditions Seakale would probably be grown with equal success. Why not try a few dozen in a box in some warm, dark corner of your dwelling house? There must be places in the neighbourhood of your hot-air chamber where you can find all the heat and darkness desired. It would be very handy and cleanly if grown in this way. Try it; putting the roots in a box with some light earth, or Cocoa-nut fibre, or leaf mould, covering the tops slightly with the same material.—R.]

Paraffin Oil no Cure for Slugs.—Seeing (p. 391) that paraffin oil was proved to be a cure for scale and green fly, and having heard that it was death to slugs, my heart rejoiced exceedingly, and as no mention was made of the proportion of oil and water, I thought I would try some oil alone. Six fine, healthy slugs were soon found, and they certainly did not like their bath; they shed their slimy coats, and started each on his own way. A friendly snail made his appearance, so I gave him a few drops; he frothed at the mouth a little and passed on. I administered a second dose to the slugs, but on returning in half-an-hour to look for their corpses, they had all fled. Possibly young plants watered with oil and water may be protected from the attacks of slugs, which may not like the paraffin, but that it is not fatal to snails or slugs unless put a-light I have proved.—R. G. V.

Mildew on Roses.—Mr. Baines' remarks on pot Roses (p. 399) are invaluable to amateurs; but why does ventilation by means of side lights produce mildew? I am about to build a small Rose house, and am much interested in this matter. I have no doubt of the truth of the assertion, as doubts regarding side ventilation have always existed in my mind. Still, the observations of Mr. Baines seem to convey a greater knowledge of mildew than I possess, and enlightenment would greatly oblige.—JOSEPH POTTS, *Sunderland.* [The foliage of Roses, in common with that of other hardy plants when grown under glass with more or less fire heat, is comparatively much tenderer than the leaves of plants are that absolutely require artificial heat in this country, and if checked in the least they at once become fit receptacles for mildew. The external air is so much harsher and colder, except in summer, than that of the houses in which they are grown, that when admitted through side openings it at once affects the tender leaves and extremities of the shoots, and renders them liable to mildew, hence its presence under such conditions. But I should recommend Mr. Potts, in the construction of his house for Roses, to provide the means for giving side air, as some may be required in summer, and the house may at some future time be wanted for the growth of other plants besides Roses. In the erection of houses for horticultural purposes I always make such provision as will allow them at any time to be used for growing plants that may require treatment different from that of the plants for which they are first built.—T. B.]

The Catawba Grape.—Where can I get this Grape? I have inquired of various nurserymen, but without success.—C. E. [Try Messrs. Ellwanger & Barry, the great American nurserymen, Rochester, N.Y.]

Aralia Sieboldi in Flower.—"J. R.," Eastcott Cottage, Pinner (p. 430), is not alone as regards his Aralias flowering in the open air in October, as all our outdoor and conservatory plants of this Aralia are in full flower. The blooms resemble those of common Ivy.—J. G.

Erodiums.—Seeing that "W." (p. 430) has put M. J. Sisley right as regards Erodium pelargoniflorum, allow me to point out a widespread error in the spelling of another Erodium, viz , E. caruifolium, which is generally written with a *v* instead of *u*, a hybrid word with no meaning. The name is taken, not from Carve, but Carui, the plant that yields the well-known Carraway seeds.—THOS. WILLIAMS.

Names of Plants.—*W. E. R.*—1, too much shrivelled to be recognised; 2, Passiflora princeps; 3, Adiantum trapeziforme; 4, Davallia elegans. *V. T.*—Virginian Poke (Phytolacca decandra). *J. F., Leagram.*—3, Habrothamnus elegans; the other specimens not being in flower, cannot be named with certainty.

Tuberous Tropæolums.—Mr. A. Henderson informs us that the seeds of these usually lie twelve months in the ground before vegetating.

Questions.

East Lothian Stocks.—I should be pleased to have the opinion of Stock growers as to the cultivation of these flowers—I mean as regards their hardiness and general management.—R. GILBERT, *Burghley.*

Scale on Epacrises.—I have some large plants of Epacris infested with white scale. Can any of your correspondents give me a receipt that will effectually kill it without injuring the plants? Would paraffin oil diluted with water be of any use?—W. M. S., *Manchester.*

Cutting Down a Large Screw Pine.—We have growing in the centre of the stove here, in an 18-in. pot, a large Screw Pine (Pandanus utilis). It has a bare stem at the bottom of about 8 in. or 9 in., and is 9 ft. high. As it is getting too large for the house, would some one kindly tell me: 1. Whether it would grow again if cut down? 2. When is the best time to cut it down? 3. Whether it would be best to cut it off close to the pot, or to leave a good long stem?—DEWSBURY.

Conservatory Ferns.—I should be glad if some correspondent would kindly give me a list of about a dozen good ornamental Ferns (not English) which would be suitable for planting out permanently in a shady, unheated conservatory.—S. CHAMP.

No. 366.] SATURDAY, NOVEMBER 23, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

ROSES.

NOTES BY AN OLD ROSARIAN.

THE Rose has had many chroniclers, from Sappho to Reynolds Hole; its praises have been sung in all lands, and in many tongues; it has inspired the poet's thoughts, has delighted the love-sick swain, and has ministered, alas! to the whims of tyrants; it has been, in our own land, the emblem of that civil war which laid low the bravest and best of our old nobility; but never was the Rose so extensively cultivated as at the present time; our Rose nurseries increase in number and size every day; the demand for it is insatiable, and from the cottager's garden to the nobleman's pleasure ground everywhere the Rose is grown and is reckoned the queen of all flowers. And should it not be so? Apart from all associations connected with it, it has in itself charms rarely combined in a flower—its delicious perfume, the brilliancy of its hues in some and the delicacy of its tints in others, its adaptability to succeed in all soils and climates, and the profuseness of its blossoms all combine to make it the favourite it is; and that would be, indeed, a strange specimen of humanity who would attempt to decry the Rose. Yet have I a complaint to make, not against the Rose, but against the way in which it is regarded now—the one point which seems above all others to be thought of in connection with it is its character as an exhibition flower. Like the lady at the Royal Botanic Show who, seeing one of Mr. Bull's valuable stove variegated plants, enquired, "Is it good for bedding out?" so now everything seems to be summed up in the praise of a Rose when it is said it is a fine exhibition flower. It is for this cause that the old-fashioned Roses are well-nigh banished from our gardens, every space therein which cannot be occupied by a Duke of Edinburgh or a Baroness Rothschild being grudged by most modern Rose growers. How rarely do we see the old Cabbage or even the common Moss! and yet what more fragrant than the one or beautiful than a bud of the other? For this cause Roses that have not an atom of scent in them figure largely in the garden. We confess to an admiration of Baroness Rothschild or Mons. Noman, but if they had not been exhibition Roses they could never have sustained the place they have. For this cause, too, Roses that have no more constitution than the inmates of a consumptive hospital are petted and coaxed in order that they may give a bloom or two, and then be consigned to the rubbish-heap, inducing, by their appearance on a "winning stand" on a show day, some less experienced grower to "order" them, only to see them pine away and die. For this cause some of the most beautiful Roses are spoken contemptuously of as Daisies or Ranunculuses, because they are so small; thus, in all the domain of the Rose Queen, there is not a more beautifully-shaped Rose than Comtesse Cecile de Chabrillant, the only one that poor Marest ever raised, and yet it is gradually becoming less and less seen, until many a Rose grower will be ashamed to confess that he ever exhibited the flower, and all this because it is small. For the same reason a Rose almost unique in its colours, Souvenir de Dr. Jamain, is rarely seen, and many others are only tolerated because now and then they may give an exhibition flower. For this cause, too, Roses are divested of all their buds save one, so that in the garden of the Rose grower whose soul soars not beyond the exhibition table, one never sees the Rose in its most beautiful aspect, like a comely matron surrounded by a bevy of lovely daughters—all must be pinched off save the one which is destined to figure at the show by-and-bye. Now I do not depreciate shows and show Roses. I believe the Rose would never have obtained the wide popularity that it has had it not been for our Rose shows; nay, it is because I value them, and more because I love the Rose, that I desire to raise my voice against a too exclusive reference to them in our Rose growing. I would write for those who desire to find a delight in the Rose, not merely those which modern intelligence and skill have added to our store, but those of former days of which poets sung and for which lovers sighed; nay, sometimes as I go out from my own garden, where the choicest and newest varieties are grown, I stand in admiration before a wild Rose, with only its petals and its golden anthers, which has festooned itself with a grace no training could give it, and wonder, after all, whether man has not rather spoiled than beautified Nature's work.

Those who took the trouble to look at the stand of old-fashioned Roses exhibited at the last meeting of the National Rose Society must have been surprised to find how many beauties had been overlooked in the rush for the larger and more brilliant novelties. Amongst those shown on this occasion were the following (I omit the half-dozen Teas): Scotch White, Fabvier, Cramoisie supérieure, Crimson China, Felicité Perpetuée, Aimée Vibert, Lamarque, Bourbon Queen, Old Cabbage, Yellow Provence, Madame D'Arblay, Ruga, Crimson Damask, Old Damask, Rosa Mundi (commonly called York and Lancaster), Madame Legras, Chénédolé, Crested Moss, White Bath Moss, Fairy, The Garland, White Globe Hip, Comtesse de Lacepède, Village Maid, Rose de Meaux, Coupe d'Hébé, York White, Kean, Hypatia, Fulgens, Alba Felicité, La Ville de Bruxelles, Madame Hardy, Mrs. Bosanquet, Crimson Boursault, Blairi No. 2., besides some others of which even the diligence of Mr. Julius Sladden, of Chipping Norton, who exhibited them, could not discover the names; but it is evident from this list that there were many others which might have been added as coming within the terms named, *i.e.*, Roses known before 1840. The Austrian Roses were unrepresented. Amongst Gallica Roses, too, D'Agasseau, Boule de Nanteuil, and Adele Prèvost might have been added. Then the Banksia Roses were absent, so that, if, as it is to be hoped, the National Rose Society should continue to offer prizes in this class, the zeal of cultivators and lovers of the Rose may rescue from oblivion some of those flowers our forefathers delighted in; and this need not be any retrograde path; if the lovers of herbaceous plants consider the re-awakened taste for the old-fashioned flowers of former days not a falling away, but an advance in gardening, seeing that there is more skill required for their cultivation than for the multiplication of thousands of Zonal Pelargoniums, and that the variety they exhibit is infinitely more beautiful than the best polychrome arrangement of the modern style, so at least the lover of Roses may claim that in seeking to bring back into our gardens many a discarded favourite, he is adding to that variety which even a Rose garden may be benefited by. If, then, in taking up the subject of the Rose, I wander somewhat from the beaten path, if I regard it less as an exhibition than as a garden flower (although I do not propose to leave it out in any of its aspects), I may perhaps be doing some little service to a wide circle of its admirers who, reading of all that seems necessary to obtain good flowers, despairingly hold up their hands and say I must leave that to others. If I can show such that as much real enjoyment of the flower can be had from it in a quiet way as the most successful exhibitor ever had, and if I can induce some to try again many an old favourite which is now nowhere in the race, I shall feel that I am contributing something as a loyal subject to raise still higher the standard of our lovely queen.

ROSES IN MARKET GARDENS.

HYBRID PERPETUAL ROSES.—These are not grown in houses in nearly such large quantities as are Tea Roses, because to force them into bloom early in the year incurs much trouble and expense, and the blooms once cut from them, the plants are, comparatively speaking, done for the season; whereas Tea Roses keep on growing and flowering; and, moreover, their blooms are more valuable than those of any other kind of Rose. Mr. Ladds, of Bexley, grows Hybrid Perpetuals in larger numbers than any grower I know of near London; he has a house of similar dimensions to those already referred to filled with them during winter and spring. These furnish a quantity of blooms at Easter and keep up a supply until Roses become plentiful out-of-doors, after which time they will not pay for house room. The varieties principally grown are General Jacqueminot and Victor Verdier, these being preferred to all others on account of their perfectly formed and richly coloured buds. The plants are grown in the form of standards from 3 ft. to 4 ft. in height. They are planted during the summer in the open ground; and in the autumn, after being slightly pruned, are taken up and planted indoors in beds specially provided for them, and in this position they yield thousands of buds during May and June, after which time they are again planted outside. Sometimes the plants suffer in consequence of being thus suddenly turned out of a warm house into the open air even in April, but having the whole of the summer to recruit themselves they invariably give satisfaction. Mr. Maller, of Tottenham, has a long span-roofed house permanently planted with General Jacqueminot. The plants, which are on the Manetti stock, occupy beds on each side of a centre path running through the house. The ends of the shoots are yearly pegged down to the soil, which causes them to break freely and produce a dense thicket of strong shoots, each bearing large trusses of blossom. They are usually in flower at Easter when the blooms are of most importance. The only objection to this plan is that the house is made unavailable for other plants during the time the Roses are not in bloom; but anyone wishing to adopt this system might have the lights forming the roof of the house made so that they could be easily removed during summer and autumn and used for other purposes, and this would benefit the Roses by exposing them fully to the weather. Mr. Reeves, of Acton, grows all his Roses in 6-in. and 8-in. pots; they are brought into bloom in three successive batches, each consisting of about 1000 plants. The first batch come into flower early in March, when they fetch 9s. per dozen; the second in April, and the third in May. After blooming is over the plants are plunged out-of-doors for the remainder of the summer in a sunny situation. In autumn when wet weather sets in the plants are laid on their sides to ripen their wood. They are pruned in October or November, and the first batch are placed in a cold frame until they break into growth and bloom buds can be discerned, when they are removed into a warm house, and replaced by the second lot. The variety grown here is also General Jacqueminot. Early in June we often find in the market Hybrid Perpetual Roses in 6-in. pots offered for sale. Such plants are very dwarf and bushy, the foliage being clean and healthy, and each plant bears from five to eight good blooms. Plants like these are seldom found in private gardens, owing chiefly to the fact that gardeners force them too rapidly, or have not often suitable places in which to grow them. The great point to be observed in forcing Roses is to bring them on with as little heat as possible until the bloom buds are discernible, after which they will stand comparatively rapid forcing. Frequent syringing, fumigating, and plenty of water at the roots are also points of great importance in forcing Roses. A large quantity of cut Roses is supplied during summer by growers who deal in Rose plants, and as these are benefited by the removal of the blooms, a twofold purpose is thus served, and the money obtained for the flowers, which is from 15s. to 20s. per hundred, goes a long way towards paying for labour, &c. Some growers have, however, permanent plantations of Roses on the Manetti stock on purpose to supply cut blooms. In this case they are planted about 4 ft. apart in rows, the points of the strong shoots being yearly pegged to the ground. A warm border or open plot is selected for them, the ground is heavily mulched with half rotten manure, and large crops of flowers in early summer and late in autumn are gathered from them. The chief objection raised to the pegging-down system is that the ground cannot be kept clear of weeds; but when it is heavily mulched comparatively few weeds make their appearance. The best thing in use for the prevention of the green fly on Roses is a solution of Quassia chips; it is cheap, clean, and easily prepared. Among suitable kinds of Roses for outdoor planting in the way described the following may be named, viz., Alfred Colomb, Charles Lefebvre, Edouard Morren, General Jacqueminot, John Hopper, Boule de Neige, Gloire de Dijon, Lord Macaulay, Senateur Vaisse, Madame Chas. Wood, alba rosea, and Victor Verdier. Gardeners a few miles from London who grow outdoor Roses expressly for market in the shape of plants or cut flowers provide themselves with plenty of propagating pits and stock plants. For Tea-scented varieties, the cultivated seedling Brier is the favourite stock, and for that class of Roses it is superior to the Manetti. When the plants are grafted in winter and spring they are plunged in bottom-heat in close and shaded frames, and as soon as they have rooted fairly and have begun to grow they are repotted, and replaced in the same frames as before until root action has again fairly commenced, after which they are placed on the side shelves of the houses or pits to make room for others. They are afterwards potted as required, pinched when the shoots have a tendency to become too long, and gradually inured to a cool temperature. During this period they are kept moderately moist with tepid water, gently syringed overhead every fine day, and kept in as light houses as possible. Tobacco water or Quassia water are used to keep down green fly, and flowers of sulphur to keep down mildew. By the 1st of June these young plants are hardened off, so as to be ready for planting out. Beds are prepared for them in deeply-worked soil, liberally enriched with old manure and leaf-soil, and having an eastern or south-eastern aspect if possible. Here they are planted in rows at variable distances, and over their roots is placed a mulching of Cocoa-nut fibre, leaf-soil, or decayed manure. In planting it is an important point to bury the point of union of stock and scion in the soil, so as to encourage the emission of rootlets from the scion, thus giving the plants additional support. Such as are required for retaining in pots are re-potted in a compost consisting of two parts rotten manure, one part leaf-soil, and three parts loam, and plunged out-of-doors in beds, and treated like permanently planted ones. The pot plants, as winter approaches, are brought indoors to be forced if necessary, and to supply scions for grafting. The permanent bushes remain untouched, with their mulching still round their roots, until the pruning season comes round in spring. The ground is then cleared of all prunings and hoed, and otherwise made properly clean; but at no time are the alleys between the Roses dug or even what is called pointed. A fresh mulching consisting of two loads of decayed manure mixed with one load of leaf-soil is then laid on thickly, and this keeps the roots moist, and near the surface. The result of this treatment, as might be expected, is healthy, vigorous plants and abundance of Roses. Before the buds begin to expand a small piece of bast matting is tied—not firmly—around each to preserve their symmetry and prevent their expansion; for as during the height of the Rose season blooms are cut daily, or at least three times a week, the quality of the buds is not thus impaired. They are cut early in the morning when the dew is on them, and in this way they travel better, and keep fresher than if gathered later in the day when they are dry. C. W. S.

THE KITCHEN GARDEN.

IMPROVED ASPARAGUS CULTURE.

Mr. W. Allan's instructions for the formation of Asparagus beds (p. 428) would, I doubt not, be found very useful to "An Elderly Amateur," who wishes to be informed respecting their construction after the most approved pattern—that is to say, if he desires that in due time his table shall be supplied with heads as big as thumbs; but if fingers would satisfy him, it is possible he might find it worth while to dispense with beds, and grow the plants singly in ordinary borders. Taking out the soil to the depth of 2 ft., and bringing in abundance of turf, crushed bones, and stable litter—all this can easily be accomplished where there are plenty of hands and ample means, and the conviction that all this is necessary if you intend to grow Asparagus is just that which deters those who have neither a long purse nor extensive grounds from providing themselves with this desirable luxury. They are, perhaps, aware that Asparagus does not yield produce that can safely be gathered till it has occupied the ground for four or at least three years. This they would put up with; it is the other difficulties that scare them. A single plant of Asparagus requires a space of at least one square yard to grow in, and, indeed, it soon extends its roots beyond that limit. Hence economy of space is promoted by planting Asparagus in beds, where the roots can cross each other, and in time become a tangled mass, and they would soon exhaust the ground in which they grow, unless they were most liberally supplied with stimulating nourishment. The Asparagus plant, if allowed sufficient room, requires no more manure than do the other garden crops; indeed, if sufficient attention be given to it by occasional top-dressings of salt, with a little soot or artificial manure, it will produce in the open quarters fine shoots and plenty of them; but, grown in this way, it requires more room than it does when planted in beds, and our object, of course, will be to ascertain how space may be economised. Here the plants stand in a single row about 34 in. from crown to crown, and 18 in. from a gravel path into which they can, and they do, send their roots on that side in search of nourishment. On the other they have their own border, which they share with Carrots, Broccoli, or whatever the crop may happen to be next them. But these are not allowed to approach the crowns of the Asparagus nearer than 3 ft., and the space left vacant is sometimes utilised by pricking out young Lettuces, Broccoli plants, &c., in it. It is important not to damage the roots by digging too near the crowns; the fork only should be used, and that very carefully, in the space allotted to the Asparagus. It will be perceived that by this arrangement loss of space is considerably diminished, and there is no need whatever for an excessive expenditure of stable manure. An ordinary Asparagus bed takes as large a slice on of the manure heap as a crumpet does out of a pound of butter. The liberal supply of bones, turf, and manure with which the beds were at the first enriched, gets exhausted in the course of time, and then the plants have to depend entirely for their support on what is washed into the soil through the top-dressing by the heavy rains. Another advantage gained by the adoption of the system advocated relates to the choice of plants. One-year-old plants seem to be generally recommended with a view to results. I should, however, prefer a good admixture of plants of two years' growth. The number that fail will most likely be very small, and they can be replaced by others if they do not thrive. At the time of planting, or a little earlier, a sowing of seed should be made in another border for a supply of plants either to fill vacancies, if there happen to be any, or to extend the plantation if desired; but it will be found that considerably less than half the usual number of plants will be wanted if your Asparagus is grown in the manner herein recommended. The distance from plant to plant which Mr. Allan gives is very much greater than is usual with Asparagus grown in beds. Johnson's "Gardeners' Dictionary" (edit. 1870) directs that the plants should stand 1 ft. apart, and Mawe's "Gardener" (edit. 1868) makes the distance 10 in. or 1 ft., much too near for the plants to thrive. As to the depth at which they should be set, I think 3 in. will be found sufficient and more conducive to the growth of the plant than if it were put in deeper, and even a less depth I would recommend if top-dressings of fresh soil can be obtained. When making sowings of Asparagus, be careful that only a single seed is deposited in one place; laying the seeds at equal distances along a flat strip of wood and reversing the latter over the drill will facilitate this operation. You are not likely to want many plants; therefore allow them room enough, and they will be all the stronger in consequence. When the plants bear seed, if the tops are not removed before some of it has dropped, the seedlings produced must be removed as soon as they are discovered. In recommending this method of cultivating Asparagus, I assume that the soil in which it is tried is of fair average depth and richness, and in other respects suitable to the growth of the plant. B. S.

VEITCH'S AUTUMN SELF-PROTECTING BROCCOLI.

We are now cutting magnificent heads of this Broccoli, which in all respects seems equal to Veitch's Autumn Giant Cauliflower, and as the qualities and value of this are so well known, no greater praise can be bestowed on it. This Broccoli, coming in as it does just now, when the season for Cauliflower is nearly over, and before such as Snow's, Osborn's, Backhouse's, or others can be had, fills up a gap that has always occurred in the supply at or about this season of the year, when there is generally a greater scarcity of choice vegetables than at any other time, as Seakale and other forced vegetables do not generally aid us much till after Christmas. Although this fine autumn Broccoli is very self-protecting, I find it always advisable to heel a good many in on a warm, sunny border, where they can be easily and quickly protected by throwing a few mats or other covering over them on the appearance of sharp weather. So cared for, the heads are safe, as, although there may not be frost enough to injure the white heads so far as to discolour them, the least touch always imparts a strong taste, and quite spoils their delicate flavour. I could tell a Broccoli or Cauliflower that had been nipped by frost by the smell after being cooked without seeing or tasting it, as the odour which they exhale is very disagreeable. Opinions on the utility of laying Broccoli appear to differ, but there is a great contrast between such as are grown in rich, enclose gardens and those in poorer soils in open fields around London the stems of which are small in comparison and altogether of a harder and more woody nature. Such as these will stand when others would be killed outright; and although, no doubt, laying them checks growth and the size of the head they produce, it is much better to have a quantity of small one than to risk the loss of the crop altogether. This being so, I would advise that a portion, at least, have their stems protected by sinking them in the ground, either where they are growing or some other spare, vacant spot where they can be put closer together, and set the land they occupied previously at liberty for some other crop earlier than it would otherwise be. As to which way the tops slope to the north or south, it matters little, as the weight of snow or cold is sure to press all the leaves down flat over each other, and it is these that then protect the stems and crown, and keep the little warmth there is in the ground by stopping radiation and preventing the frost entering. Standing upright in their natural position, the leaves fall away from the crowns, which is the most vital part of the plants, and leave them fully exposed to frost and the blast of cold, cutting winds, under which ordeal many of them must of necessity succumb. S. D.

REMOVING THE SEED FROM ASPARAGUS.

There is in The Garden (p. 429) a very good article on the growth of Asparagus. One direction, however, is omitted, viz., the carefully picking off all dropped seed, the ruin of the best bed ever made. Unless the bed be carefully swept every year the fallen seeds produce plants, and the consequence is that want of room causes progressive diminution of size, until at last the heads do not arrive at a greater girth than a quill pen; the roots get irremediably mixed, weeding cannot be satisfactorily done, therefore the bed that should have been in perfection twenty years after planting has to be destroyed in ten, and all owing to a little neglect in not carefully removing the seeds As for management of Asparagus, the less said the better, for what applies to one soil fails in another, nor without considerable expense can any one arrive at perfection. As for forcing Asparagus, it is a mistake. We, in Dorset, every year try the plan of destroying part of an old bed, but the produce is colourless and flavourless, even if you do succeed in producing respectable-looking heads at a cost of twenty times their value. Give the beds, both in November and March, as much salt or brine as you can get; if happily you reside near the sea where there is a sandy beach, the Asparagus, equally with the Seakale, enjoys being well dressed from the coast, and at the same time there is an immunity from slugs and worms. The only questions not settled—Should a bed be made raised or flat? Should there be good drainage or none? of course, supposing the ground fairly dry. Should, as at Bath years ago, large patches be cultivated, or should only single lines be planted at a distance of 18 in. between each plant? Above all, never cut a head smaller than a man's little finger, nor ruin next year's crop by cutting at all after the first week in June, and, if an early season, not so late as that.

Litton Cheney, Dorset. E. E. P. Legge.

Cloches and their Prices.—I was asked the other day a fabulous price in London for a cloche. Now, judging from what I saw in Paris, and from what I know as regards England, I am satisfied they can be manufactured and retailed equally cheap in both countries. There must be hundreds, like myself, who would gladly take their 200 or 300 16-in. cloches if they could get them at 1s. or 1s. 1d. apiece if they only knew where to get them. In the suburbs of Paris I saw acres on acres of them, and why they should be used in a drier and milder climate than our own and not in our own is a puzzle to me. For early Rhubarb, Seakale, winter salads, Strawberries, Tomatoes, Capsicums, &c., they are invaluable; you can protect against climate without unnatural forcing. Light is as essential for flavour as it is for general growth, and a larger use of the cloche would enable many a market gardener to find a ready sale for salading, which, I believe, is largely supplied at present from France. My object in mooting this cloche question is to be able to extend my salad growing later towards winter and earlier towards spring than our climate allows.—Khoda Bux.

Veitch's Autumn Giant Cauliflower.—My gardener brought in on Wednesday (November 13) one of Veitch's Giant Cauliflowers, the weight of which was 8½ lb., and the circumference 42½ in. The weather has been very cold, with snow and frost; the latter obliged us to cut it before it had attained its full growth; it has, however, proved excellent eating. Is not this an unusual size in this inclement season, even for this giant kind? The seed of it was sown March 11, and the seedlings were pricked out May 1, and planted out June 19. —A. L. Godfrey, *Kennett Hall, Newmarket.*

Forcing Rhubarb and Seakale.—At this season of the year, when the forcing of such vegetables as these is occupying attention, it cannot be too strongly urged that many are deterred from attempting so simple an operation by the supposed difficulties of the undertaking, whereas both may be most successfully forced in positions that cannot be otherwise utilised. Wherever boilers are fixed for heating hothouses, or buildings of any kind, there is, as a rule, some of the main pipes that must of necessity pass through positions where their heat is not required; all that is necessary is to make up a rough box of the desired size, and plunge the roots in light soil, covering the crowns with dry leaves, Fern, &c., and laying over the whole a lid to exclude light; keep the soil moist, and regulate the heat by raising or lowering the box, and as good a supply of Seakale and Rhubarb may be obtained by such simple means as from the most elaborately-finished structure built specially for the purpose.—J. G.

French Beans and Scarlet Runners.—Mr. Groom (p. 453) argues well, yet forgets that Kent is the garden of England, and that many experiments in horticulture may succeed in that county which would always fail where the stroke of the south-west wind comes; and if there be much water near the Beans, the earliest frost finishes them for culinary purposes, often causing the dry ones to rot. If I may offer a suggestion to a far more experienced cultivator than myself, it would be that cool frames, covered on frosty nights only, would furnish a constant supply of French Beans throughout the autumn. These Beans, however out of season to my taste, are as much out of place as the Telegraph Cucumber before salmon comes in. Last spring I had good success in forcing Strawberries, and they were valuable to send to a sick friend; I ate one, an Eugénie, and thought it very insipid. The only vegetation worth extreme forcing is that for ornamentation. All flowers pay well, and are as requisite to set off the dinner-table as to furnish a bouquet, or complete the dressing of a lady's hair.—Eugene E. P. Legge.

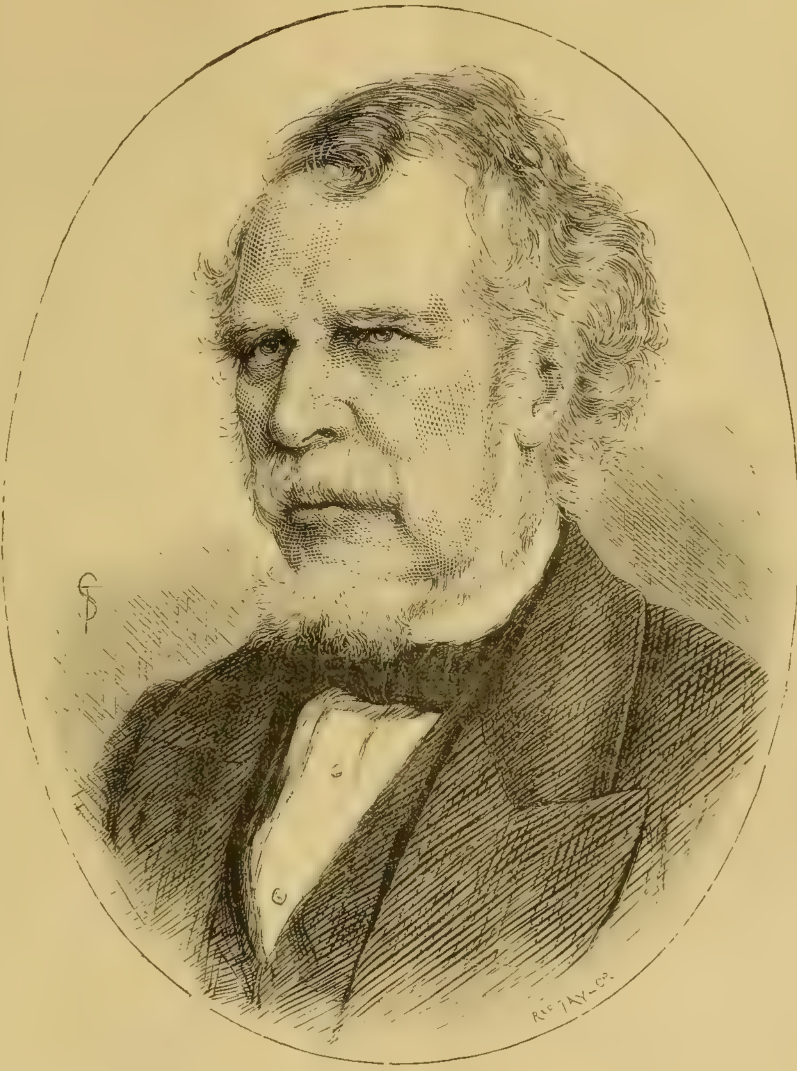
—— For some years I adopted the plan of late sowing, as recommended by Mr. Groom (p. 386), but for several years I have discontinued it. I now sow a full crop regularly about the third week in April always on ground trenched three spits deep and well manured, and, if possible, have the rows near the walks, so that the ground is only shaded on one side of the Beans; they are staked with freshly-cut Sycamore sticks 13 ft. long and from 1½ in. to 2 in. in diameter at their base. The sticks are put in much out of the upright, slanting from the row, and then they are brought together and made to cross each other, like the letter X, another stick rail fashion being laid along the upper angle to keep them in shape, as one stick springs against the opposite one; and, held by the rail, they withstand gales of wind, which, if staked in any other way, would render them useless, taking into consideration the height they are grown. The rows are upwards of 10 ft. high, and clothed with foliage and Beans abundantly every season until destroyed by frost. Of course, we have to gather them by means of steps, but the rows occupy no more ground than if only 6 ft. high. I make it a rule to stop the plants when 2 ft. or 3 ft. high, and once or twice afterwards; also to keep them gathered clean throughout the season, except those left for seed. The Sycamore sticks are only fit for Beans one season, as they would not stand wind when dry. Ash is the best, and will last three years; but the Sycamore underwood is plentiful hereabouts, and the thick ends come in for Dahlias, &c., the following year, or they do for the labourers, who grow their Beans less strong, and are always glad to have a few Bean sticks. Carters' Champion is a fine sort for exhibition, many of the pods of which measure 8 in. long, but I think the old sorts, such as Painted Lady, &c., would produce an equal weight of Beans.—J. G., *Exeter.*

—— I cannot agree with Mr. Legge's remarks (p. 423) respecting late Scarlet Runners. I always try to have them as late as possible, and also the dwarf French Beans, and, after forty years' experience, I never remember having any complaint as to their being out of season. On the contrary, I have found them even more useful than in midseason. This year we had the last dish of French Beans on the 2nd inst.; they were gathered (Oct. 30) from plants growing close to a south wall, the ground on north borders at that date being frozen. We also had a good supply of Runners through October; the last were gathered November 4, after several slight frosts. I had the last of them cooked on the 16th inst., being then plump and fresh, and all that could be desired. If Mr. Legge could have tasted them he would have said no more about Beans not being nutritious; and, as regards usefulness, I quite agree with Mr. Groom, that they are as much a luxury late as early.—W. Divers, *Wierton Place, near Maidstone.*

A New Early Tomato, the Alpha.—A basket of fruit of this variety was sent us on August 23 by Mr. Frank Ford, of Ravenna, Ohio, as the result of his experiments during several years in procuring a variety that combined excellence of form, colour, and quality, with earliness. Mr. Ford states that the specimens sent were gathered ninety-four days after the seeds were sown in the hotbed. For the rest, we can say that in form, colour, solidity, and good flavour, they are as good as the best.—"American Agriculturist."

DEATH OF JAMES McNAB.

Many of our readers will be very sorry to learn, and it is with great regret we have to announce, that James McNab, long Curator of the Royal Botanic Gardens, Edinburgh, died there last Tuesday. Lately apparently vigorous and in good health, many who knew him will be quite unprepared for the announcement of his death, which is a loss to horticulture, to the Edinburgh garden, and to Scotland, throughout which he was so well known and so greatly esteemed. A more fitting man to be curator of a botanic garden it would be difficult to find, being a great lover of plants and having a full knowledge of them and the essentials of their culture. The Edinburgh garden bore marks of this in many ways—in its rich collections of hardy plants and trees, in its Palms and other indoor plants, and reserve gardens, which were the richest we know of in any public garden. Having early made a good acquaintance with United States and Canadian plants by travelling in these countries, his knowledge of them was of such a kind as to be exceedingly useful to the curator of a botanic garden and to a landscape gardener. For twelve consecutive years before 1834 he served as an apprentice, journeyman, and foreman in the Edinburgh Botanic Gardens with his father. Besides general routine work, his early life was much devoted to the preparing of plans of gardens, greenhouses, heating apparatus by steam and hot-water, as well as in the drawing of many of the plants which flowered in the Edinburgh gardens and nurseries from the year 1829 and onwards. These were figured in the "Botanical Magazine," Sweet's "British Flower Garden," and other works. The year 1834 was spent in travelling in the United States and Canada, and the records of the more interesting plants obtained in this journey are to be found in a series of papers published in the "Edinburgh Philosophical Journal" for 1835, and in the earlier numbers of the "Transactions of the Edinburgh Botanical Society." In 1835 he was appointed Curator of the Caledonian Horticultural Society's Experimental Garden at Inverleith, where, besides the management of the garden, he had much practice in landscape gardening. This situation he held till 1849, when, on the death of his father in December, 1848, he was appointed Curator of the Royal Botanic Garden. At that time the garden contained only fourteen imperial acres. Since then the history of the garden has been one of improvement, of extension, and of progress, largely owing to his work therein. In addition to the extensive practice of gardening, Mr. McNab has often been a contributor to horticultural literature, as his writings, not only in The Garden, but also in the transactions of the Botanical Societies of Edinburgh and elsewhere amply show. He did not, however, confine himself to strictly botanical and horticultural matters; on the contrary, his writings embrace numerous essays on Vegetable Climatology, landscape gardening, and arboriculture, all of which, if gathered together, would form many volumes. He was a corresponding member of several societies, both at home and abroad; also one of the original members of the Edinburgh Botanical Society, established February 8, 1836, to the transactions of which he has been a frequent contributor ever since their commencement. Regretting his loss as one of the most advanced of the true school of gardeners, we have also to regret the loss of a valued contributor, his very last contribution to our columns being a reply to a question on Pandanuses in this issue. His family will have the sympathy in their loss of all who knew him well, and we cannot express a better wish for the Royal Botanic Garden and its collection than that they may always be in the charge of men not unworthy to be successors of James McNab.



The Late James McNab.

THE FLOWER GARDEN.

SUMMER AND WINTER BEDDING COMBINED.

Now that there is such a wealth of material in the shape of plants suited for the furnishing of flower beds in winter, there can be no excuse for these remaining empty after the summer-bedding plants have been cleared away, *i.e.*, if labour and the wherewithal to obtain the plants are forthcoming. Of course, it is useless to suppose that additional labour is not required to carry out both summer and winter bedding; but where this is allowed, or can be obtained for the asking, then I strongly recommend this kind of decoration being carried out to the fullest extent commensurate with means and demands. After several years' experience, I would not now give up my bit of winter bedding, even if challenged to do so by the withdrawal of the little extra expense which it entails. There are potent reasons why winter bedding should be encouraged. First, there is the season, when all around us is bleak, dull, and bare—leaden skies, leafless trees, flowerless meadows, and silent woods; all of which have a somewhat depressing effect on most temperaments. It, therefore, behoves us to endeavour to neutralise this prevailing dulness by making our gardens as cheerful as possible. Another reason, and one which, to those fond (as thousands are) of summer bedding, should be the great reason for adopting the system is the short period during which summer bedding continues in perfection, for the thought is continually haunting one that it will fade all too soon. The adoption of winter bedding, however, in my own case has obliterated such thoughts, and now one looks forward to and has a continuation of real pleasure derivable from both systems. Nor has this been the only result; others equally beneficial, perhaps more so, have, as it were, accidentally fallen in our way, and in this wise: It having been a *sine-qua-non* that summer and winter bedding must meet, compulsory ingenuity had to devise ways and means for the accomplishment of this result in the most effective and economical manner possible. This has led to our searching out and using as summer bedders many hardy plants which otherwise we should not have thought of using, but which are just as effective as tender exotics; nay, in some cases more so; and which when planted in the spring serve till the following spring, when they are taken up, divided, and replanted for another year. It is doubtless the endless labour connected with the short duration of summer bedding that has brought it into disrepute in some quarters, and one is obliged to admit very justly so, but if we can combine, as I contend we can, summer and winter bedding, then much of the opposition to formal parterre planting would cease. From the above it will be perceived that a sort of compromise, a give and take, a tender and hardy system of bedding is that which is here advocated. For instance, in summer planting a goodly number of the more handsome and showier growing Conifers and other shrubs should be brought into use for the filling of vases, centres of beds, and as dot plants in the larger beds. Amongst the best plants for this purpose are Retinosporas, Thujas, Junipers, Cypresses, Biotas, Yuccas, standard Golden Yews, standard Cotoneasters, variegated Hollies and Euonymuses. For lines and groundwork the following are most suitable, viz., Sedums of many kinds, Saxifrages, Sempervivums, Cerastium arvense, Mentha Pulegium gibraltarica, Veronica repens, V. incana, variegated Thyme, variegated Arabis, and others. These hardy plants being worked in with the summer arrangements, and, so far as my own experience goes, with evident improvement to the tenderer subjects, give so much the less labour when the time for the winter arrangement arrives, a few days at the most sufficing for the clearing out of tender plants and replacing them with hardy ones. Amongst the best for taking the place of Pelargoniums, &c., are hardy Heaths, variegated Ivies, variegated Periwinkles, Cotoneasters, Berberis, Aucubas, variegated Box, variegated Euonymus, Lavender, common and variegated Thyme, Pernettyas, &c. W. W. H.

Wintering Gladioli Out-of-doors.—It having been suggested that bulbs of Gladioli when left in the ground over winter will start in spring quite as well as when taken up and replanted, allow me to add a bit of my experience in regard to this matter. I believe it to be safer to take up the full-grown bulbs, as a very wet or a very cold winter might destroy many bulbs which could have been saved. I would not leave out any seedlings, but the young brood bulbs ought in every case to be left in the ground, or rather be replanted immediately after taking up the full-grown ones. These brood bulbs have a coat, which, when getting quite dry, hardens very often to such an extent that they must lie one year in the ground before they can start; whereas, when replanted in autumn immediately after taking up the parent bulbs, they will spring up freely in spring, and neither cold nor wet will injure them; on the contrary, these agencies will break the thick coating and allow vegetation to take its course in due time.—Max Leichtlin, *Baden-Baden.*

AUTUMN-PLANTING GLADIOLI.

"Delta" (p. 413) is probably right in regard to this matter. Most of the older species were, as a rule, left in the ground. For many years past we have also grown several thousand bulbs of G. Bowiensis, a very showy, fine variety. For the last six or eight years we have left them in the ground, only taking them up to divide and replant as the roots get overcrowded or the soil becomes exhausted; the result has been highly satisfactory. The crop of bulbs is more numerous and finer than under ordinary treatment, and the plants flower with great vigour and profusion. Bulbs of other varieties have also been left at times. A dozen or two were overlooked in herbaceous borders last year, and neither the wet nor the cold appears to have injured them. Many of the G. Bowiensis are grown in rows, and our practice has been to form a ridge of fine earth from 4 in. to 6 in. high over the crown of the ridge. This performs two functions possibly equally useful to the Gladioli—it keeps them dry and also warm. The better sorts of Gladioli will not bear severe frost, and are readily injured by having their crowns frozen; consequently, those who plant in the autumn, or leave their roots for several seasons in one spot, should either plant rather deeply or cover the surface with powerful non-conductors, as suggested by "Delta," or earth them up for the winter, as here recommended. It is an easy matter to form a ridge over a row, or a mound over a patch of Gladioli that shall at once shut off the rains and exclude frost. On heavy or naturally wet soils, however, it might prove dangerous to leave Gladioli in the ground. For though, doubtless, many failures, and not a little of the disease which not seldom proves as destructive as it seems inscrutable, originate in excessive and unnatural dryness, yet it is equally true that the roots cannot live or remain healthy in saturated earth. Where a good many are grown, both systems, that of dry storing and autumnal planting, should be tried, for, with such a valuable plant as the modern Gladiolus it would not be wise to trust all one's eggs in one basket. I venture to doubt whether there is much in "Delta's" idea of the greater hardiness of English-raised seedlings. All our finer Gladioli are the offspring of one or more closely-allied species, and the mere accident of the birthplace of seedlings has little if any influence in determining the hardiness or tenderness of the plants. After many years of careful attention to the subject, I have no faith in acclimatisation. For example, we have not one iota of verified truth to prove that either the Potato, the Dahlia, or the Scarlet Runner are any hardier now than on the first day of their introduction. As to the superiority of the Gladioli of the Messrs. Kelway, that is a fact patent to all cultivators, and is easily accounted for by their superior skill, special culture, and suitable soil and climate, without attributing any part of it to the greater hardiness of their many thousands of seedlings. D. T. Fish.

STEM ROOTS OF LILIES.

I have been waiting since "Dunedin's" letter, regarding the positive hurtfulness, not to say mere uselessness, of the stem roots of Lilium auratum and L. speciosum, appeared in The Garden of the 26th ult. in the hope that someone would take up the cudgels in defence of Dame Nature in this matter. I can imagine the surprise and horror of the dear old lady at this outburst of treason on the part of one of her most devoted sons. Hitherto she has been generally credited with an almost infinite variety of resource in adapting her provisions to the special requirements of each of her widely dispersed children; but to read "Dunedin's" letter one would imagine that this has been quite a mistake, or that at least the old lady is getting into her dotage and making great and ridiculous mistakes now. Up to the present Dame Nature has been supposed not only to provide for each class of her children, but also to look after each individual as well. Has "Dunedin" visited these Liliums in their native lands? because if he has not, how can he be sure that a mistake has been made in the special provision under notice, for that is really what his argument amounts to? To my mind, the presence of these stem roots in L.

auratum and L. speciosum, while they are wanting in L. candidum, at once suggests that the two former, in their native habitats, are under some condition which does not affect the latter in its native habitat, and I would set myself to ascertain wherein this different condition consists; and here I must admit that I disagree entirely from "Dunedin" in my estimate of the functions of the stem roots. I believe that they are where they are for the express and primary purpose of supplying the requirements of the flowers, and thereby taking the strain off the bulb at a time when, according to "Dunedin's" own showing, it and its roots are engaged in building up the successional bulb; and I further believe that in their native haunts these stem roots further serve the purpose of staying the long, wiry stems, and supporting them against the disturbing influences of the high winds which must sometimes visit these highland spots, and this steadying function must also be of immense value in keeping the bulbs and their brittle roots undisturbed. These stem roots act also as a thatch to preserve the bulbs and the delicate nursling successionals from over much damp. The quotation with which "Dunedin" winds up his letter, from one whom he terms "a professional writer," is, I think, the common-sense view of the purposes of these stem roots. Where "Dunedin" is wrong is to expect the stem roots to continue their horizontal course when circumscribed in a pot. In this case they must either go upwards or downwards, and naturally they prefer to go downwards. If now and then one of them gets entangled in the scales of the new bulb under such conditions, that, I take it, is "Dunedin's" fault, not Dame Nature's; but I do not fancy the damage resulting therefrom is anything like so great as "Dunedin" would have us believe. My experience is that such stray roots, when they do occur, do no harm. "Dunedin" is entitled to all honour for the valuable researches by which he has established the true nature of the growth of Lilium bulbs, but I fear that in this matter of stem roots he has not pursued the same philosophical course of building up theory from actual facts. I believe that to cut off the stem roots, as "Dunedin" counsels, and thereby throw all the work of supplying the flowers, as well as the successional bulb upon the old bulb and its roots, will be found to gradually weaken the growth and diminish the size of the bulbs. "London Stone," I see, in your last number, asks the very pertinent question how "Dunedin" proposes to increase his Liliums "when he does not allow them to seed, and scrapes the stem in addition?" and I must confess I await his answer to this with some curiosity. It will be easy to arrive at the true nature of the functions fulfilled by these stem roots by a series of comparative experiments, and when "Dunedin" can place the results of such before us, and by them prove his present opinion to be right, I—and I doubt not many others—will accept the result cheerfully, but not till then. A. S. O. N.

LILY GROWING.

"Dunedin" says (p. 433) that Mr. Dod "in saying that he gains a year's growth by buying a large bulb, is simply deceiving himself, and possibly others." Does any practical cultivator of the Lily believe this statement of "Dunedin"? I should think not. I am not going to dispute with "Dunedin" whether the old bulbs do or do not die annually, but this I will say, that the largest bulbs produce the strongest stems and the greatest number of flowers, as a rule, and a gardener, if he wants flowers, should certainly buy large bulbs, if he can afford to do so, for they are higher priced simply because they are believed to flower better. Practically speaking, Mr. Dod is quite right. "Dunedin" may call it what he likes, but by buying a large bulb, whether we gain a year's growth or not we at least buy the prospect, if not the certainty, of more flowers. I will cite a case in point; let "Dunedin" answer it if he can. A neighbour of mine bought a root of Lilium auratum; it produced a few fine flowers the first year. Finding the root larger at the end of the season, it was given a larger pot, and the following summer it produced a still better and stronger stem and more flowers, and this went on for two or three years, I forget exactly how many, till when I saw the plant it had a stem some 10 ft. or 11 ft. high and nearly as thick at the base as a young Larch tree, with a crown of fifty or sixty flowers upon it, to speak within safe limits, for, if my memory serves me rightly, the number was even greater. It was the grandest Lily I ever saw. Now, the question I wish to put to "Dunedin" is this: In whatever way that Lily bulb grew, it at least got larger every year (I reckoned it to be about the size of a child's head from what I saw of the top of it), and it produced a proportionately stronger stem and a proportionately greater number of flowers, and I submit that if I had judged it by its size alone, I would have judged correctly, and that by every year's growth it had upon it I would have been a gainer—that is, by each year's growth I should have had a bulb possessing greater flowering power, which is, I suppose, all Mr. Dod means by saying that he gained a year's growth by buying a large bulb. J. S. W.

AUTUMN FLOWERS IN HERTFORDSHIRE.

The fine autumn with which we have been this year privileged has been unusually favourable to late-blooming flowers; indeed, I hardly ever remember to have seen them so fine. Brugmansia sanguinea, which has now stood four winters with me in the open border, had fifty-two expanded or semi-expanded blooms at one time rather more than a month ago; B. lutea has also been very fine. They began to bloom in July. I cut them to the ground with Michaelmas Daisies, and cover them with Cocoa-nut refuse till May. Fuchsia cordifolia has stood out six or seven years treated in a similar way, and has been full of bloom. Ruta albiflora has lived out for several years without any protection whatever, but, unless we have a fine and late autumn, it seldom blooms well; this year it has been perfection. Exogonum purga was in bloom till about a week ago. Arctotis grandiflora is not quite hardy, but it is a splendid bedding plant; its silvery foliage and great orange flowers are equally beautiful. It strikes freely from cuttings, if put in in July, and the old plants are easily lifted. Salvia tricolor has been a bush of bloom up to the present time, and Leucocarpus alatus has only just had its white berries blackened by the frost and rain. Asteriscus maritimus has held out bravely, and has only just succumbed; it is one of the very neatest and best of the dwarf, golden-yellow, perennial Composites. Dahlia Cervantesi has, as usual, been very handsome, and so have its congeners, which bear the names of D. coccinea, aurantiaca, and lutea, especially the last. It is so pretty and useful for decoration, that no garden ought to be without it. A little bush of Eupatorium ligustrinum, which stood last winter, has been perfectly smothered with bloom. A very early form of Narcissus præcox, from Malta, has been in bloom for three weeks. An equally early form of Galanthus nivalis, which was collected for me by Lord Walsingham, either in Albania or the Ionian Isles, bloomed both last year and this in the middle of October. Crocus Boryi, orphanides, medius, vitellinus, ochroleucus, nudiflorus, Elwesii, sativus, Cartwrightianus, Cambessedianus, serotinus, pulchellus, p. albus, Clusii, byzantinus, longiflorus, l. melitensis, cancellatus, tingitanus, and damascenus have been in bloom, but it has been too cold for these autumnal Croci to open well. H. Harpur Crewe.

Drayton-Beauchamp Rectory, Tring.

ZINNIAS, SINGLE AND DOUBLE.

When the late Dr. Lindley once termed the Dahlia "lumpish and inelegant" he, in all probability, intended to convey his impression that the course of improvement to which the flower had been subjected had resulted in the production of blossoms of decidedly monotonous character, in the rounded angles and in a uniformity of shape that presented but little in the way of variety. It is only an enthusiast with the Dahlia that will linger long over a stand of twelve, twenty-four, or thirty-six varieties, however finely the flowers may have been grown. The double Zinnia is passing through a similar course of improvement; single forms have become almost entirely lost in large, full, double forms; the size of many of them being nearly equal to that attained by many Dahlias. But the uniform perfection of shape is yet wanting in the case of the Zinnia, perfect as some of the flowers are; and, in addition to brilliant colours and variations in point of size, we also get differences of shape, which really lend an additional attractiveness to the flowers. A few years ago, and double Zinnias were a thing unknown. When the double forms did appear, they were warmly welcomed, because at that time double flowers were in fashion. The Floral Committee of the Royal Horticultural Society, a body which took a decided lead in encouraging the production of double flowers, and not without making some mistakes in doing so, have lately given first-class certificates to single Dahlias, some of which have been in cultivation nearly half-a-century, thus reversing its former policy to some extent. Perhaps, some day, the single Zinnias, which are in danger of being driven out of cultivation by the double flowers, will be recognised in the same way.

There is one good characteristic about the double Zinnias: they are not in some instances of such rank and unwieldy growth as the single types, and the process of dwarfing has gone hand-in-hand with that of multiplying the petals in the flowers. Careful selection also has done something in the way of inducing a better habit of growth, and it will be observed that it often happens that particular types of flower get improved both in habit and blooms at the same time. Some of the single Zinnias are very beautiful, such as the yellow, carmine, rosy-purple, scarlet, crimson, and orange. These, with the white, which is after all not a good white, will be always acceptable for their large showy blossoms and brilliant colours. I had an opportunity of inspecting in August last a large trial of Zinnias just as the flowers were at their best. There was quite a garden of them, for a few plants of each variety had been grown on in pots from the seed bed, and, when they had established themselves, had prospered with great freedom, and each had formed a fine-branched specimen. This afforded a rare opportunity of ascertaining what the double Zinnia is capable of from a decorative point of view, and I must admit the result was in every way favourable to that form. What fine plants they make for cutting from, and the act of cutting induces growth, and renewed growth brings a fresh supply of flowers. In the case of the following varieties, which form the pick of the collection, the flowers were very large, almost on a par with some Dahlias in this respect, handsome in shape, and associated with white and brilliant colours: Scarlet, very bright, one of the best; rosy-purple, very good; atro-purpurea, a fine hue of deep purple; orange, bright and striking; yellow, coccinea, rather brighter than scarlet, a remarkable tint of colour; crimson, very fine; Kermesia, very fine carmine-crimson, large and full; and alba, fairly pure in colour, but not so fully double as the foregoing. There is what is termed a striped section of double Zinnias, but I have never seen any answering to the characters given to them, but I do not deny their existence; I simply state that I have not yet seen them. In some parts of the country cut blooms of both double and single Zinnias are much grown for show purposes, and there is as much rivalry in the efforts to gain first prizes as in the case of Dahlias and Asters. While the Zinnia lacks the great size of the Dahlia, and the soft beauty and delicate colours of the Aster, it yet includes vivid tints and lustrous hues foreign to both these popular autumn flowers, and stands of well grown flowers of double Zinnias are most effective on the cut-flower table.

The Zinnia comes under the denomination of a half-hardy annual. The seed is sown in a gentle bottom heat in early spring, and the plants are hardened off and put out into the open ground to flower. Many spoil their plants by keeping them in the seed-pans and boxes till they are planted out, and in consequence the plants become drawn and grow tall, instead of fine, free-branching examples. When they are grown thus thickly together the roots cannot well form good balls with soil adhering to them, and when transplanted the plants are some time before they make a start, and when they do they seldom branch out. Those who care for Zinnias prick off their plants from the seed-pans into other boxes, or into a bed in a cold frame, where they are put sufficiently far apart to form good balls of roots. It is a good plan to pot a few of the earliest of the plants, and grow them on to come into flower as soon as possible, so as to inaugurate a succession. The soil for the Zinnia should be of a light, rich nature. Leaf mould, manure, and a good sandy loam make an excellent compost. In this the plants root freely, and when they do this, they seldom fail to do well. D.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

How to Grow Ampelopsis Veitchi.—Most persons who have seen Veitch's Virginian Creeper must acknowledge its merits, but its beauty may be enhanced in a tenfold degree by allowing about three stems to grow, and cutting off all the side shoots close every spring, when young ones quickly grow out, covering the wall with a delicate foliage which is frequently mistaken for some new and beautiful Ivy; these branches, although so tender looking, last an astonishing time in vases or worn in the hair.—C. E. Isham, *Lamport Hall, Northampton.*

Ivies and Virginian Creeper on Trees.—Allow me to uggest that instead of cutting down the old trees at the back of the anger's house in Hyde Park, as has been recommended, that they be utilised to show the beauties of various Ivies, Virginian Creeper, and other climbers that will grow in London.—A Cockney Gardener.

Pæderotas.—These comprise a small group of dwarf Alpine herbs belonging to the Figwort family and nearly allied to the Wulfenias, of which we have two species in cultivation. There are also but two kinds of Pæderota in gardens, and by far the most ornamental of these is P. Bonarota, which is found amongst rocks, &c., on the Alps in various parts of Austria and Carniola. It varies greatly in height, being from 2 in. to 1 ft., which appears to be its maximum height. The stems are slender, bearing opposite, short-stalked, roundish, and sharply-toothed leaves. The individual flowers, which are rather small, vary from pink to a bright violet colour, and are borne in dense, erect, terminal racemes from 1 in. to 3 in. long, and are produced during May and June. Though it has been known to cultivators for upwards of sixty years, it is at the present time a very scarce plant in this country, and we are pleased to notice it included in the catalogues of some of the Continental nurserymen. It is synonymous with the P. cœrulea of Linnæus. P. Ageria, the other cultivated kind, is a much less showy plant. It grows from 1 ft. to 1½ ft. high; the lower leaves are small and roundish, the upper larger, lance-shaped and pointed, whilst those of the middle portion, which are the largest, are ovate and tapering; all are unequally and sharply toothed. The manner of flowering is much the same as the preceding; the blossoms are of a pale yellow colour, and are produced in May and June. It is a native of the Alpine districts of Carinthia, Carniola, and various parts of Italy, from whence it was introduced to this country about half a century since. —W.

Dwarf Fuchsias.—Mr. Smith, of Newry, does well to call attention to the merits and beauty of Fuchsia pumila, a pretty little gem far too seldom met with. Fuchsia globosa on poor soil used to be almost as dwarf in habit, though, of course, with far larger leaves and flowers; and some twenty or more years ago Fuchsia microphylla and macrantha were popular bedding plants, though hardly hardy enough to stand the winter unprotected. These had small leaves and little tubular flowers, and were altogether very distinct and beautiful either in lines, groups, or small beds. These, with not a few other old favourites, seem to have dropped out of cultivation. —D. T. Fish.

Fuchsias for Planting Out-of-doors.—It is much to be regretted that growers of Fuchsias limit themselves almost exclusively to hybrids of garden origin, disregarding, or nearly so, the important species which we have had so long; for instance, it is seldom one meets with that fine old plant Fuchsia fulgens, and still seldomer do we see F. corymbiflora in good condition. Many years ago I met with both these in a garden a few miles from Windsor planted out in beds in the flower garden, the first named being from 6 ft. to 7 ft. high, the last one still higher. I think they were taken up in autumn and stowed away after the manner of Dahlias, and they well repaid the trouble, as the flowers, like those of all the section, being of a pendent character, are not so effective when seen on small plants as on large ones, and both kinds can be raised from seeds. There is also a small variety very seldom met with, and for many years I lost sight of it altogether, but I eventually ran against it in an old garden in Surrey. It used to be called F. parviflora or F. microphylla. It is a pretty little kind, and ought to be more generally grown than it is, as it is a most abundant bloomer. There are also, I believe, one or two other species distinct enough for ordinary hybrids to be entitled to a place in collections, but the kinds which I have named are pre-eminently so.—A Retired Gardener.

Lamium striatum.—This plant almost merits the designation of perpetual flowerer; indeed, I have known it to be in flower the whole year through, but that was when the winter was exceptionally mild. Its beauty, however, lies rather in the variegation of the leaf than in the flower. Early in spring, and even in the depth of winter, if the weather be not too inclement, the variegation is beautifully marked. It is just one of those plants which, if instead of being extremely easy of culture demanded heat and great care, would be very much prized.—J. Cornhill.

Haberlea rhodopensis.—This is a charming little rock garden plant much resembling a Gloxinia in miniature, and it is also very interesting, as being one of the few hardy members of the Gesnera family. It forms dense tufts composed of numerous small rosettes of leaves which have the appearance of those of the Pyrenean Ramondia (R. pyrenaica), each rosette producing in spring from one to five slender flower stalks bearing from two to four blossoms each nearly 1 in. long, of a bluish-lilac colour with a yellowish throat. It is found in the Balkan Mountains growing amongst Moss, &c., on damp, shady, steep declivities at considerable elevations. At present it is rare in English gardens, but it should be sought after by every lover of hardy plants.—W.

Hardy Flower Garden Plants.—Attention having been directed (p. 352) to the merits of the Valeriana Phu as a suitable plant for winter and spring decoration in the flower garden, might I ask if this plant is not the same as that sometimes called Marsh Valerian, a British plant inhabiting marshy places, and having white or pale-coloured flowers? I have not seen it for years, and was not aware that there was a golden variety of it, but as there is, I have no doubt that it is pretty. It has often occurred to me that if a bright yellow hue could be given to the pretty foliage of the common roadside plant Potentilla anserina, called also Silver Weed or Goose Grass, it would be found to be a great acquisition in flower gardens, and possibly there may be more of our British plants which might be made serviceable in that way. For many years I had a pretty white-foliaged variety of the common Colt's-foot, which may be common elsewhere, and I believe that gem amongst plants, the variegated Polymonium, is only a variegated form of the wild species, and very likely several others of our wild plants might likewise be turned to good account in a decorative way. I remember once running accidentally against a wild plant amongst some hardy ones in a nursery.

man's collection, and, obtaining it, I found it was by no means a despicable one. It is called Meum Athamanticum, and has foliage much resembling that of some of the Adiantums; the flower is umbelliferous, and the plant is only remarkable for its foliage. And now-a-days, when fine-foliaged plants play so important a part in flower gardening, hardy wild ones should be sought after, being most easy of culture. The ordinary Stonecrop has been enlisted into the service, and also some Saxifrages, and doubtless the number might be increased. I expect some one will take up the case of the Valerian alluded to above, and I hope to see others of a similar character brought into notice.—A Retired Gardener.

Saving Old Bedding Pelargoniums.—I agree with "Cambrian" (p. 412) as to his plan of saving old bedding Pelargoniums, having saved thousands every year in the same way; but, according to my experience, "Cambrian" has omitted the one thing needful, that is, as soon as they are put in the boxes they should be placed, if possible, in a gentle heat to give them a start, removing them when they begin to grow into a cooler place. If this be not done, a great many are liable to rot.—F. Cannell, *Felthorpe Hall, Norfolk.*

Tritonia aurea as a Border Plant.—I have had this bulb in the open ground for the last three or four years, and have never noticed the shoots to suffer in the least from frost. The clumps grow stronger each year and flower more profusely, and they get no attention beyond what I give to the border in general. They are planted in a corner facing south and east, where they get the full benefit of all sunshine until between 2 and 3 p.m. I think they kept in flower this year for quite a couple of months. I have not found them to stray very much. They are planted at the foot of a sweet-scented Clematis, the roots of which may prevent them wandering to the extent Mr. C. W. Dod complains of.—F. J. Alexander, *Fernlees, Gunnersbury.*

The Golden Chickweed in Winter.—In addition to this Chickweed (Stellaria graminea aurea) being one of the most useful yellow carpet plants in summer which we possess, it may also be made to form a dense, thick mass of bright golden leaves in autumn and winter. I lately noticed a large patch of it in the Wellington Nursery, which had been left undisturbed for years, as bright as I ever saw it in summer. This result is effected by allowing the plants to produce seeds early in autumn, and then cutting them down close to the ground, an operation which causes them to break afresh from the bottom and form a golden-yellow, close carpet in winter. Where hardy shrubs are employed for filling up flower beds in winter this would form an excellent undergrowth.—S.

Clematis Pitcheri.—I am glad to see that some of our American friends watch our horticultural proceedings, and that they set us right now and then, as far as nomenclature is concerned, in the case of plants truly American. I have made many enquiries, and have searched every work which I have come across to find out the name of the Clematis described as scarlet, and figured in the "Revue Horticole." I have applied for plants from several of the leading nurserymen in America of Clematis Pitcheri with red flowers (I was afraid to say scarlet), and they all say that they have never seen or heard of any such plant. Their description agrees with that given in Gray's "Manual of Botany," viz., "flowers dullish purple." It seems strange that such a mistake should have been made between two distinct kinds, for the plant in question is not C. Pitcheri, but a variety of C. Viorna called coccinea, a plant sparingly found in a few localities in the United States.—A. P.

Arum Lilies (Callas) Out-of-doors.—I agree with both Mr. Hinds and Mr. Williams, that this Arum makes a much better plant treated as an aquatic through the summer season than managed in the ordinary way. We put some out here this year in much the same manner as that described by Mr. Williams (p. 432). We had a large flat bath made for the purpose in the shape of a half circle, which held eighteen good plants. This bath, which was 10 in. deep, was sunk in the centre of a border up to the rim; about 6 in. of good soil and old hotbed manure were then put in the bath, on which the plants were arranged according to their height; the bath or trough was then filled with water until it reached the rims of the pots. On each side of the Arums was planted a small group of variegated Maize, and in front of the bath were plunged some plants of Agapanthus; at the back were Tobacco plants. The Arums, which seemed to be quite at home, produced a very good effect. I was requested to let the plants remain out in the bath, which I did until the 12th inst., when they were brought in to all appearance a complete wreck. In the course of a day or two they recovered to some extent, but the finest of the foliage is very much spoilt through the frost, of which we had 9°. I state this to show that this Arum is not sufficiently hardy to withstand our winters out-of-doors, at least not in this locality.—H. Andrews, *The Hill, Salisbury.*

THE INDOOR GARDEN.

FUCHSIAS.

From much that has been written recently on these most useful plants, it might, so far as a portion of the views expressed are concerned, be inferred that Fuchsias had only recently come prominently under the notice of cultivators, and that the many uses to which they may be put had only now been discovered, or that they had in a measure been neglected or discarded and set aside in favour of other plants more ornamental, and generally better deserving of cultivation; yet nothing can be more erroneous or opposed to facts. I am ready to admit that Fuchsias are not now so well represented on most of the exhibition stages as they once were, and this despite the very substantial prizes that in some places are offered for them, but this is not difficult to account for by those who have taken the trouble to notice the spirit by which the best plant growers, in almost every part of the country where exhibitions are held, are usually actuated, that is, after a time a disposition to take in hand for exhibition only those plants that are the most difficult to grow. So general is this the case that amongst the best plant growers now existing, with many of whom I am personally acquainted, there is scarcely one who did not commence with the more easily managed subjects, such as Fuchsias and others of a similar character, and afterwards turned their attention to those things that need the most careful study as to their requirements and unremitting attention in administering to their wants. Were Fuchsias equally difficult to produce in perfect condition, they would doubtless be seen at all our principal horticultural shows. There is also another class of plant growers who care little about Fuchsias, or, in fact, anything else, unless it happens to be the plant of the hour. At one time it is tricolor and bicolor Pelargoniums that find favour; next it is zonals that take their place to the exclusion of everything else, until the contents of the greenhouses of those enamoured with them are as monotonous and painful to look upon, and as devoid of elegance in form as a field full of Poppies; now it is tuberous-rooted Begonias that are in fashion, which, in their turn, will, no doubt, be supplanted by the first available new subject or exhumed old one that can be made to answer the purpose of getting up a sensation. But this is not gardening in the legitimate sense of the term. That consists not in fleeting favour for this or that plant for a time, but none long, but in keeping on selecting and cultivating as many plants as are found really worthy of attention, and that afford the diversity of form, colour, and contrast generally that go to constitute the true charm of a garden either under glass or in the open air. So far from the cultivation of Fuchsias, as grown for general decorative purposes under glass, being on the decline, or ever likely to be so, it is simply the reverse; for, excepting the large and diverse family of Pelargoniums, taking them collectively, there are no plants so much grown as Fuchsias. Of this any one who is in the habit of moving freely about the country and seeing many gardens large and small cannot fail to be aware.

As to Fuchsias not being so much used for bedding as some other plants are, or their merits entitle them to, the reason for this is equally easy to see. After planting out in spring, they are not so soon fully in flower, nor do they ever furnish the same amount of colour as plants that bear their flowers erect; their natural drooping habit does not admit of this. But there are not many who have anything like a general knowledge of gardening matters who are not fully acquainted with their adaptability for planting out. There are few gardens, large or small, in which they are not more or less so used, except, perhaps, close to towns, where the plants selected are generally such as will make the greatest blaze for the short summer months. Fuchsias are, however, much superior to three-fourths of the tender plants that are usually bedded out in summer in every property worthy of consideration, and they have only failed to become popular through their not producing an even surface of colour that tells at some distance off, an indispensable condition with many in their choice of any plant for this purpose; but, as better taste prevails in these matters, I have no doubt their merits will be more appreciated. But, where Fuchsias are to be thus grown, let me plead for better treatment than covering the surface of the ground occupied by their roots with Ivy, Periwinkle, or anything of a similar character. Ivy quickly impoverishes the soil to which its roots have access; it very soon weakens and destroys such plants as the common white and Turk's-cap Lilies, herbaceous Pæonies, Michaelmas Daisies, and Phloxes, all of which I have tried in an Ivy-covered bed, but, despite all the assistance that could be given them without cutting away the Ivy, they very soon perished, and the latter two, at all events, of the above-named plants, are so well able to hold their own against most others as to get considerably above their share of whatever food is within their reach. The proposed treatment of Fuchsias is about on a par with the usage they too often receive under pot culture, where, after a short start in spring, not unusually under Vines, or other light-obstructing influences, they are frequently relegated to out-of-the-way corners in conservatories or other structures where few things can live and have a good appearance. Some years ago I had a good-sized bed in a light, open position planted with Fuchsias of different colours, dark and light. The plants stood 1 yard apart, and between them in the inner portion of the bed were clumps of Lilium bulbiferum and L. candidum, and a few plants of the white and pink varieties of Anemone japonica, which required nothing more than some of the lower branches of the Fuchsias towards the end of summer being cut away to keep them from encroaching too far upon the surroundings. This was easily managed without showing at all that any cutting had been necessary. Hyacinths, Tulips, Crocuses, and Snowdrops occupied the outer edges of the bed, making a display in spring, and dying down before the Fuchsias had pushed their branches in a way to interfere with them. All that was requisite was to cut down the Fuchsias as soon as the frost destroyed their tops, and put about 8 in. or 9 in. of coal ashes over their crowns for the winter. This covering was removed in spring, a moderate quantity of manure slightly forked in, and the surface kept clear from weeds until the branches of the plants almost covered the ground. Thus managed, I never had a bed that gave so little trouble in proportion to its size, or that was altogether more satisfactory. The quantity of flowers which it furnished for cutting without their being missed was worth considering where cut flowers were largely in demand. T. Baines.

REGULATING CONSERVATORY CLIMBERS.

Now that the short, dull days of winter will soon have arrived, it is high time to give attention to the thinning and regulating of all kinds of conservatory climbers, in order that the light and air which they obstruct may be allowed to have full play for the benefit of the plants beneath them. Much judgment and discretion, however, are necessary in doing this, for without a full knowledge of the habits of the different varieties, and their mode of flowering, whether on the old or young wood, a good deal of mischief may be done. If we take the Bignonias, for instance, and remove the long, dependent shoots made during the present year, we take away the bloom that would appear in the spring; and the same would happen in the case of the Lapagerias and others; but to prune out such from Passifloras, Tacsonias, and similar plants is a work of necessity, in order to allow room for fresh shoots to occupy their places. Those of the current season having so far served their purpose, at least two-thirds of them formed during the summer may be removed, leaving the remainder till fresh growth has made some progress, when they too should be cut away, except such as are likely to be required for laying in to fill vacant places. This kind of treatment leaves just sufficient foliage to keep the roots slowly at work and the sap in circulation to feed the spurs and plump up the buds left near their base. The almost perpetual flowering character of Tacsonia exoniensis and T. Van Volxemi is such that it is impossible to cut away anything from them without sacrificing some bloom at the extreme tips of the pendulous shoots, and the only way to keep them in order is to be constantly regulating and encouraging the young ones, and gradually cutting out such as are getting too long or becoming exhausted. This will prevent undue crowding, and will allow their flowers to be seen to the best advantage. There is no way of growing these equal to having them in a lofty ridge with just the main stems made secure, and the lateral branches allowed to depend straight down overhead, which is far more natural and effective than any kind of training, however well may be carried out; indeed, these and Passifloras are only adapted to this mode of culture, and exceedingly graceful they are when well cared for and not allowed to get into a wild, entangled condition.

The great drawback to Tacsonias is their liability to scale, that often assails them to such a degree as to have the appearance of being splashed with minute spots of whitewash, and this kind of scale is, of all others, the most difficult to kill. The best remedy I have ever found is to paint the bark of their stems over with some Fowler's Insecticide mixed with clay so as to make a thin wash similar to what Vines are usually dressed with, and this stifles them and keeps the plant free from attack for some time after. Paraffin used at the rate of a wineglassful to four gallons of water is said to be a sure cure, and if so, being so easily and quickly applied, as it may be by means of a syringe, it will be one of the greatest boons that cultivators have ever experienced. Lapagerias, like Tacsonias, are also very subject to the same kind of insect, and likewise thrips, especially if they happen to be in houses where the atmosphere is a little too dry, or other conditions not altogether favourable to their growth. Handwashing these is a difficult and tedious process, owing to the stiff and peculiar formation of the leaves, and here, therefore, the paraffin will be of rare service. It is to be hoped that those who have the opportunity will experiment with it, both alone and in connection with soft soap, Tobacco water, &c., and give a report for the benefit and guidance of others. If this be done carefully, and the quantities of each ingredient used and the effects produced noted and made public it would be of great service.

In regard to the general treatment of these latter lovely climbers, the thing is to encourage as much young growth as possible, and the way to do this is to give an abundant supply of water from the beginning of April to the end of October, which will assist it through its flowering period as well. In Chili, in its native habitat, it blooms during the rainy season, when the sky is dull and overcast, thus showing that it is fond of a good deal of moisture at that time; but if we look at the structure and immense substance of the flowers, they afford convincing proof that it must take abundant supplies to feed them. If well drained, and in a bed composed of rough, fibry peat, as they should be, it is impossible during the summer months to give too much water, as they will nearly grow in it if it be not stagnant or remain too long in the soil to cause it to become sour and inert. The shoots of Lapagerias flowering only once should be cut away when the blooms die off, unless it may be thought desirable to save any of them for seed. These come on pods of various lengths and sizes, and germinate readily when ripe, if sown in heat in sandy, peaty soil kept regularly moist. Next to those already mentioned, I think Tecoma jasminoides, one of the most desirable of conservatory climbers, but to get it to flower freely it must have a very light house, with full exposure to the sun, in order to get the wood well ripened. Even with these advantages it is often a shy bloomer when planted out where its roots can run unrestricted; and the way to produce the most satisfactory results is to confine it to a limited space, and keep it rather short of water during the early part of the autumn and winter. The habit of this, like the Bignonias, is to flower on the growth of the previous year, and the pruning, therefore, must be regulated accordingly.

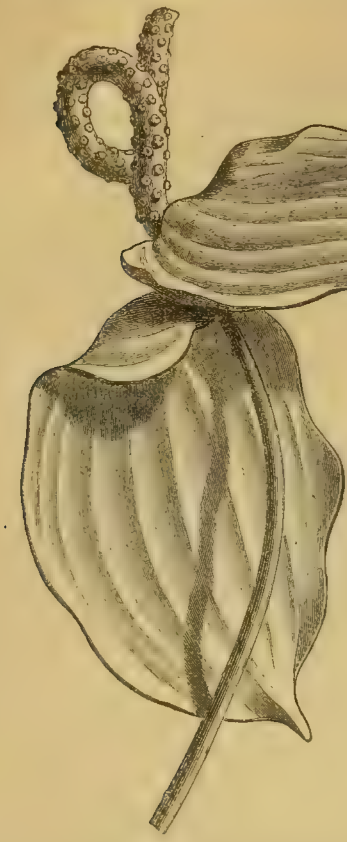
Besides the general cleaning and regulating of all kinds of conservatory creepers, the present is the best time for adding to or renovating any old borders that may have become exhausted or the soil in an unsuitable state for healthy root action, as, owing to the semi-dormant condition the plants are now in they will bear more pulling about than at any other season. For the generality of them there is nothing better than good sods of fibry peat and loam chopped up rather coarse and a liberal supply of sand added to keep it open and porous. If from 6 in. to 12 in. of this mixture is given and a covering of the old soil laid over the top, it will result in a greatly increased state of health of the plants and a more floriferous habit.

S. D.

Salvia leucantha.—This beautiful and abundantly free-blooming Salvia is now a most ornamental plant for the decoration of the winter greenhouse, and is well worthy of more extensive cultivation than it receives. It is a native of Mexico, and is figured in Vol. LXXIII. of the "Botanical Magazine," t. 4318, but the plate by no means does justice to the beauty of the flower, as, indeed, the accompanying letterpress frankly admits, saying that the rich violet or lavender-coloured tomentum of the calyx and the pure white of the corolla cannot be well represented on paper. It has also the great merit of being exceedingly quick-growing and of the easiest cultivation, a small cutting of it given me by a friend (who brought it from Cannes, where it abounds) at the commencement of this year, which was only 3 in. in height when put out into the open border at the beginning of summer, having, by the time it had to be lifted again in September, developed into a large bushy plant, requiring a 10-in. pot to accommodate it, and it is now one mass of flowers.—W. E. G.

A DOUBLE-SPATHED FLAMINGO PLANT.

The "Revue Horticole" figures a variety of this plant, which it calls Madame Jules Vallerand, a sort raised by M. Vallerand. It seems very like Anthurium Daviesi, raised in England, but that variety (figured in The Garden, June 12, 1875) differs from it in having the spathes overlapped.



Anthurium Scherzerianum var.

COOL-GROWN BOUVARDIAS.

The best plants of these I ever saw were grown at Messrs. Fisher, Holmes, & Co.'s nursery, Handsworth, Sheffield. The plants of which I speak I saw about three years ago, and they were growing out-of-doors in a frame with the lights off, under the shelter of a Beech hedge. This would be about the end of August. When I saw them again it was at Christmas, when they were at their best—strong, sturdy bushes with such foliage and flowers as one rarely sees. Of course, they had been removed from their outdoor quarters some time after I saw them and pushed on afterwards in a kind of intermediate temperature. Previous to that time I had grown our own plants under glass all the year round, but I discontinued the practice, and with the results lately mentioned in your pages. I do not doubt Mr. Baines's success in growing his plants well in a stove during the winter (p. 436), but I do not think such treatment is necessary. Shoots made during the dull, dark days of winter in a stove temperature produce poor flowers, but those produced from hardy summer growth are sturdy enough and well developed, and if such plants be placed in a warm greenhouse about October, they will continue to produce flowers for a long while. A temperature of from 55° to 60° suits them best during the winter. I find a good deal of difference of opinion exists on the subject, even amongst the best growers, but there can be only one right way after all, and it is desirable that we should be certain what that way is. I find that Mr. G. Baker, of Coombe, Surrey, in the "Gardeners' Assistant," before referred to by me, recommends a temperature during the growing season of from 55° to 65°, and the "coolest part of the forcing house" in winter, in which structure only moderate temperatures are recommended. On the other hand, Mr. Baines, writing on the same subject in the same book, recommends a growing temperature throughout the summer of from 70° to 80°, a difference of nearly 20°. At the end of July he says the plants may be removed to a cool frame, but in order to have flowers throughout the autumn he recommends the plants to be again early introduced to a temperature of from 68° to 70° at night, with a proportionate rise in the daytime, which looks very like treating the plants to a stove temperature nearly all the year round, a kind of treatment which many others, as well as myself, find to be not only unnecessary, but positively injurious in general culture. Mr. Baker's advice appears to me to be the best and safest; but one is surprised to find such contradictory advice given on the same subject in such a work as the "Gardeners' Assistant."

J. S. W.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Hybrid Orchids.—Until comparatively recently the number of garden-raised hybrid Orchids existing might have been counted on the fingers. I well recollect the time, many years back, when it used to be said that Orchids were at least free from the hand of the hybridist. Mr. Dominy was the first to show to the world what it was possible to accomplish in this way when he raised the exquisitely-beautiful Cattleya exoniensis from seed. But Mr. Dominy's labour in this particular direction did not end here, as has been proved by the many fine hybrids that have subsequently made their appearance from Messrs. Veitch's establishment, notable amongst which may be mentioned Calanthe Veitchi, and more recently the fine Lælia Dominiana, and there are still at Messrs. Veitch's hundreds of unbloomed seedlings. During the present autumn a considerable number of Cattleyas have flowered, remarkable for their elegant and delicate colours and long endurance. They are the result of crossing such kinds as C. labiata, C. Loddigesi, C. Aclandiæ, and the above-mentioned hybrid, C. exoniensis, which is thus the parent of a second generation. The seedlings appear to be almost all autumn bloomers, which is a great advantage, looked at from a general gardening point of view, as in this way they add to the comparatively few that flower during the dull season. There are also a number of seedling Masdevallias, some eighteen months old, growing with the proverbial freedom of the species; from these something good may be looked for. These hybrids are not only highly interesting to those who make Orchids their especial favourites, but equally so to the many who take a broad view regarding the progress made in the cultivation of flowering plants generally.—T. Baines.

Orchids without Heat.—In furtherance of what "C. W. S." (p.376) has written on this subject, allow me to say that we have a house of Orchids to which no artificial heat has been applied for these last two years beyond what has been needed to keep out frost, and I give them all the air I can during hot days, even setting the door open. I find that they like all the air and light they can get; in fact, a cool greenhouse, in which Fuchsias and Pelargoniums will succeed, will suit most of the Odontoglossums, Masdevallias, Oncidiums, Lycaste Skinneri, Lælias, Pleiones, Cœlogynes, and Trichopilias. The house in question is a span-roofed one, running east and west, and I find the less shade they have, without allowing the sun to burn them, the better. Miltonia spectabilis in this house has produced upwards of 100 flowers; it is well exposed, and grows vigorously. Lælia Dayana also does well in this house. The best plant I ever saw of Dendrobium speciosum grew in the open air during the summer time. We keep a large quantity of Cypripedium insigne in a cool frame all the summer, and plants of it are now coming very freely into flower. It is a plant that will bear as much rough treatment as an Agapanthus. About fifteen years ago I remember saying to Mr. Wilson Saunders, then at Hillfield, that the time would come when Orchids would be grown as easily as Fuchsias, and I am still of that opinion.—J. Croucher.

Cestrum aurantiacum.—For training to pillars or rafters this fine climber is unequalled amongst autumn-flowering greenhouse plants, and it is, moreover, a plant requiring the simplest culture. It should be planted in a bed of rich soil, and be cut hard back in spring. Thus treated, it will not fail to produce every autumn a profusion of rich golden blossoms in long, drooping terminal branches which contrast finely with the bold deep green foliage. Though it is a native of Guatemala, it has proved itself capable of withstanding such winters as the last two in warm localities, with only the protection of a wall. If it does prove hardy it will prove a good addition to decorative wall shrubs, and a fit associate for Habrothamnus corymbosus and H. fasciculatus.—W.

Warming Small Greenhouses.—Allow me to describe a simple method which I have had carried out in my greenhouse, and which, after two winters' experience, I find to answer very well. For this system, however, it is necessary that there should be a fireplace in the house conveniently situated for that purpose. My greenhouse is a small lean-to against the gable of the house. My dining-room fireplace is in this gable, and I had the ordinary back of the fireplace removed, and a small boiler inserted in its place, which forms the back of the fireplace, and in which the water is easily heated to boiling point. From this boiler small pipes, about 1½ in. in diameter, are laid underneath the greenhouse stage. A small cistern is placed at the extreme end of the stage and connected with the hot-water pipes. This cistern compensates any small loss there is in the water during circulation or by escape of steam. The whole thing was done for a few pounds, and the after expense is nothing, as all that is necessary is on a frosty night to put a few shovelsful of cinders on the fire, and this will keep it going until next day. A kitchen fire would, of course, answer still better, as the heat would be much greater.—S.

Salvias in Pots *v.* **Planted Out.**—These form such useful plants for furnishing large conservatories where large masses of colour are required, that the most expeditious way of getting up a good stock of them is of importance when such structures are required to be kept gay during the winter and spring months. I have tried the plan of planting out such varieties as splendens, Heeri, and gesneræflora, but although larger plants may be grown with less attention as to watering, &c., than by confining them in pots, I am convinced that more floriferous and altogether better plants may be grown by the latter method, as, being of a strong-rooting and gross-feeding habit, they become over-luxuriant if planted out in good soil; and, as is well known, a short-jointed, well-ripened growth is conducive to free flowering, it follows that pot culture is most likely to attain that end in the case of such subjects as the Salvia, and on the score of economy of labour there is not so much real as apparent saving by the planting-out system, as the extra attention of lifting, potting, and getting the plants established would nearly counterbalance the labour of watering, which is the principal objection to the pot system. It is altogether different with plants like the Calla, where the size and strength of the leaves determines the size of the flower, as in the Salvia a well-furnished head of flower is of more importance than the size of individual flowers.—J. Groom.

Abutilon Anna Crozy.—This new hybrid Abutilon has by far the brightest-coloured and largest flower of any of the new varieties which I have seen. Its colour is a fine deep purplish-rose, and its flowers are at least half as large again as those of A. Boule de Neige. They are most perfectly formed and of fine shape and substance. It is well worth adding to any collection of greenhouse plants. I received it by post in a small state from a Lyons nurseryman, and do not know whether it is yet in cultivation in England or not.—W. E. G.

The White-flowered Weigela.—To all those about to order shrubs for out-of-doors or blooming in pots, I would say give this a trial. It is one of the most beautiful white-blooming shrubs grown.—J. C. F.

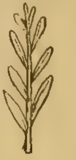
PLATE CLV.

JAPANESE PRIMROSES.

The annexed coloured illustration of Japanese Primroses represents a race of hardy new forms of so much beauty and variety, that the wonder is they are not much more generally grown than they appear to be, especially as their value for house decoration ranks very high. We are indebted to the late Mr. John Gould Veitch for the introduction of Primula cortusoides amœna or P. Sieboldi, as it has since been designated. This was followed by the white variety, the Lilac form, known as lilacina (which is so distinct and altogether so unique in character as to rank almost as a species), and the rose and white variety known as grandiflora, the inner or upper surface of the petals of which is white, the reverse rose. Probably one or two of these are garden hybrids raised in this country. It appears inexplicable, but it is not less a fact that these fine forms were under cultivation in this country for a considerable time before new varieties were obtained from them. Probably this arose from the circumstance that P. amœna, which is most generally cultivated, rarely matures its seed. The other three are more free in this respect, especially the variety grandiflora. It is worthy of record that three almost simultaneous attempts were made to cross-breed from these fine hardy Primroses, viz., by M. Victor Lemoine, Nancy; Mr. James Allen, Shepton Mallet; and by Mr. A. Dean, Bedfont. We have heard that M. Lemoine's new types are both fine and distinct, and that they have been much appreciated on the Continent. Mr. Allen has obtained some charming varieties, among them pretty lilac and pale mauve forms of P. amœna, and Mr. Dean has obtained a valuable break both as regards variety and colour. Three of these are represented in the accompanying illustration; that at the top is laciniata, a fine kind, remarkable for its large, bold flowers, which, as will be seen, are handsomely fringed on the edges, and of a rich, bright purplish-red colour, a tint difficult to represent on paper; that on the right is purpurea, a sort having large and finely-formed flowers of a bright mauve-purple, very distinct and handsome; and that on the left is maxima, a greatly-improved form of grandiflora, largely increased in size, purer in colour on the surface, and deeper on the reverse side. These were all awarded first-class certificates at South Kensington. Mr. Dean has also raised many other varieties of scarcely less merit, but the foregoing will sufficiently illustrate their value. One chief merit possessed by these new Japan Primroses is, that they bloom early, coming in about the month of April, when flowering plants are not particularly plentiful; another is, that they are remarkably free bloomers, throwing up, as they do, successional flower stems, and lasting a long time in perfection. For pot culture and cool greenhouse and conservatory decoration they are unequalled at the time of the year just alluded to. Their cultivation, also, is comparatively easy. The best soil for them is light, rich, free material, consisting of fibry loam, leaf-mould, pulverised manure, and some grit to keep it open. When grown in pots, the latter should be well drained, as the roots keep pretty near the surface; they are also impatient of excessive moisture, and, when planted in the open ground (for the Japanese Primrose is a perfectly hardy plant), they should be in thoroughly drained soil, or in raised positions on rockwork. The roots creep just below the surface and form eyes, by means of which any one variety can be easily propagated. The Japanese Primrose is a herbaceous perennial, which loses its leaves in autumn and winter, when it goes to rest, and breaks up again early in spring. R. D.

PROPAGATING.

Leptodactylon californicum.—This lovely bright pink flowering plant would certainly be more extensively used in the flower garden but for the supposed difficulty as to increasing it. If a few plants be taken from the greenhouse and put into an intermediate house in January, they will begin to push out young shoots of which cuttings can be made in the manner shown in the annexed illustration. They may be inserted in cutting pots filled with peat, loam, and sand, and with sand on the surface; well drain and water, and let the bell-glasses be put over them; then place them on a gentle bottom-heat, and they will emit roots in three weeks; the glasses may now be raised a little at a time, till they can be left off altogether; they may then be potted off, set on a gentle manure bed, and they will be ready for planting out in May. H. H.



Cutting of Leptodactylon californicum.

Propagating Tuberous-rooted Begonias.—I find that these useful plants are easily propagated by means of leaves. Leaf cuttings with the stalks adhering to them inserted in shallow pans of light, sandy soil, and placed in an ordinary propagating frame, made up of leaves and stable manure, soon root and put forth a shoot—a hint which may perhaps be useful to cultivators having limited accommodation, and who are anxious to increase any particular variety they may possess.—A. Hossack, *Ragley*.

Verbenas for Propagating.—Verbenas required for propagating purposes at the turn of the year should now be kept as cool as possible. By the new year they will be in fine condition for introducing into heat. They are very liable to the attacks of green fly and mildew, which, if not checked in time, will effectually cripple them. Dip them in Tobacco water, or fumigate for the former and dust freely with sulphur for the latter. For rapid, easy propagation, healthy and vigorous plants are indispensable; there is then no difficulty in working up a quantity from a limited stock.—J. Cornhill, *Byfleet*.

Tuberous Tropæolums from Seed.—If properly treated, the seed of tuberous Tropæolums does not require twelve months in which to germinate. If sown in August they will come up freely in October. I have raised a great many of T. tricolorum and azureum without any difficulty in this space of time.—J. Cornhill, *Byfleet*.

Colonial Museum for London and Proposed International Horticultural Exhibition for 1880.—On these subjects we have received the following from Mr. Wills, of Onslow Crescent, South Kensington: "I see by the daily papers that steps are being taken by the Council of the Royal Horticultural Society with the view of allocating as a site for the Colonial Museum, the situation which I had the honour of suggesting in my memorial to His Royal Highness the Prince of Wales and Her Majesty's Commissioners for 1851. I am extremely pleased to see that the Council have so quickly responded, and that they are anxious that the proposed Horticultural Exhibition of 1880 should be held. I for one shall be delighted if it should prove to be the means of stemming the torrent of adverse fortune which for many years past has enveloped the Royal Horticultural Society, and destroyed its usefulness as regards the advancement of horticultural science. It would also be a source of much gratification to all connected with horticulture if it should prove to be the means of the gardens at South Kensington remaining in the hands and under the control of the Council of the Royal Horticultural Society, and a great boon to the people who live near the gardens; it would also secure one more open spot for joyous recreation. It is, therefore, earnestly to be hoped that horticulturists of every degree will join hand in hand and all work with a will to carry out what will prove to be a grand national scheme. Now is the opportunity for developing an international horticultural exhibition worthy of the name of us. Let all now unite and feel that we have only one common interest at heart, namely, the advancement and maintenance of horticulture as a science worthy of our country. Let us prove to the colonies how worthy we are of their esteem, and to all subjects of foreign nations how delighted we shall be to see and entertain them. Horticulturists have been treated with every respect and kindness in connection with many of the great horticultural exhibitions on the Continent. Let us for once show our neighbours who are fighting the battles of horticulture on the Continent and elsewhere how much we have appreciated their kindness, and how gladly we will be to welcome them to our shores in 1880. We shall secure the patronage and most valuable support of H.R.H. the Prince of Wales, which will be in itself a tower of strength, as all will admit who have seen to what a successful issue the great Universal Exhibition of Paris has been brought. It is not only horticulture and agriculture that would benefit by the suggested amalgamation; it would also be the means of cultivating and improving the minds of millions of Her Majesty's subjects, thereby instructing them in the peaceful arts and sciences, a circumstance which could only be conducive to their future happiness and welfare."

GARDENING FOR THE WEEK.

Roses.

Climbing Roses.—Where climbing Roses are to be introduced to plant houses of any description, the present is a good time for planting them; but, desirable as it is to have Roses where they can be trained on the roof, to pillars, or in other positions in ordinary houses, especially where there is no structure that can be devoted to them alone, it is nevertheless well to consider the matter so far as regards the absolute requirements of the Roses before introducing them. There are few, if any, plants that are more subject to the two greatest of gardening pests, aphides and red spider, than Roses. If these be allowed for only a short time to have possession of them, they will injure the flowers and disfigure the foliage to such an extent as to make the plants more an eyesore than an ornament, to say nothing of their communicating the insects to everything in the house grown under them, on which they will live. For this reason it becomes a necessity all through the growing season to have recourse almost daily to a copious application of water, with either the garden engine or syringe. In their case no mere sprinkling will be found of much use; therefore, however desirable it may be to have Roses grown in this way, their presence on the roof of an ordinary conservatory is not advisable where the body of the house is required to be kept gay by the continuous introduction of flowering plants, rendering the use of the water impossible without the manifest damage and disfigurement of the flowers standing under them. Insufficient forethought in this matter usually ends in disappointment. When they can be trained on a glass end of such structures, where the frequent applications of water will not fall directly upon anything of consequence below them, there with advantage they may be grown. Their close proximity to the light in a position of this sort will be another point in their favour.

Border for Roses.—To insure Roses lasting for any considerable time, the bed or border in which they are grown should contain sufficient soil to support them. Although a good deal of assistance may be given to the roots by the application of liquid manure, the annual removal of a few inches of the surface soil, and the replacement of it with new material, still these will not compensate for too limited an amount of space wherein the roots can extend. One of the first matters to be thought of is sufficient drainage. This should consist of several inches of material, such as brick rubbish broken fine enough, clean gravel or burnt clay ballast, and in addition to this there should be an outlet drain from the bottom; over this put thin turf sods with the Grass side downwards. These allow all the superabundant moisture to pass from the soil, and more effectually prevent the earth from washing into the drainage than any partially decomposed vegetable matter will do. Over them place the soil, which should consist of good strong loam, like that in which Roses out-of-doors are found to thrive the best; to this should be added as much rotten manure as will make the whole a moderately rich bed for the roots to feed upon as soon as they begin to extend, but as the bed is of a somewhat permanent character, a couple of small spadesful of ½-in. bones to each wheelbarrowful of soil will be an advantage.

Selection of Plants, &c.—In selecting plants for a position of this sort, the most continuous blooming varieties will be found the best. Maréchal Niel is a general favourite, producing, as it does under favourable conditions, large crops of handsome flowers; yet I consider it anything but the best Rose for such situations. It is an extraordinarily vigorous grower, and, unless skilfully managed by a yearly reduction of considerable portions of the wood, to be replaced by strong new shoots, it becomes a thicket of small, comparatively weak spray, the greater portion of which does not flower. It also appears in many places to be somewhat short-lived, cankering off at the base, or going wrong in other ways, whether grown on its own roots or worked on the usual stocks. Any of the freest-growing Tea kinds that are found to do well for indoor culture will usually be preferable to Maréchal Niel, giving that which is of very great importance in the case of Roses in such positions, viz., a longer continuance of bloom. There are no structures in which a general collection of plants is cultivated wherein Roses on the roof can so advantageously be grown as in a Camellia house, for here, if trained not too thickly, so as to darken the plants too much, the shade afforded by them during spring and summer would be rather an advantage than otherwise, and the free use of water required by the Roses would do no harm to the Camellias; but here, as in all other houses where Roses cannot be treated exclusively as they need to be in the matter of heat, they cannot be depended on to bloom at the time when the flowers may be wanted in the way in which they will do in a regular Rose house. Roses for planting out in this way should always be plants that have attained a good size and strength. The small weakly specimens that are sometimes used will, in all probability, be a year or two before they make much progress, and sometimes fail altogether, as when any plant possessing only a small amount of roots is thus placed in a considerable body of soil, the latter frequently gets into a sour, unhealthy condition before the roots are sufficiently numerous to take possession of it.

Planting Roses.—The plants should be turned out of the pots, and it is generally necessary to loosen the roots wholly from the soil, so as to lay them out full length in the bed. It is for this reason that it will be found better to plant such Roses when their growth is dormant than to delay it until further in the winter or till spring, when they would be to some extent under the immediate exciting influence of more or less fire-heat or increasing sun power, either of which would be inimical to their flowering next season, through the fact of the buds being all at once excited into growth before any progress at all had been made by the roots. Nothing is more suitable to use for such purposes than any examples that may be in hand or can be procured of Roses that are getting too large for pot culture, as by employing these there will be no loss of time, as they will bloom the ensuing season. No further cutting back will be required than shortening the strongest shoots slightly, or the removal of weak, useless growth. Before the plants are put in their places it will be well to wash them freely with Tobacco water, to which has been added a little sulphur, as, if even no living aphides or red spider can be detected upon them, the eggs of these may exist, which it is very necessary to destroy previous to their coming to life, for prevention is better than cure in their case, as fumigation often harms the foliage, which, like that of most other hardy plants, is more tender and susceptible of injury when grown under glass than out-of-doors. In the case of Roses planted out in situations such as these, or in houses where more or less fire-heat will be applied as the winter advances, where any renewal of the soil is necessary this may be immediately done, through which interference with the roots at the time when growth is commencing will be avoided, a circumstance that has a good deal to do with their ability to flower in the way desired. As much of the surface soil should be removed as can be done without mutilating the roots, replacing it with new material of a description like that recommended for the first formation, treading it down tolerably solid.—T. Baines.

Indoor Plant Department.

Coleuses and Alternantheras.—Coleuses that are required for growing in pots or for bedding purposes will now need to be kept in a moderate heat. If there be a deficiency of room in the house or pit, where such subjects are to be wintered, cuttings may be taken from any large plants that exist, which will soon strike, if covered with bell-glasses in a genial temperature; the old plants may then be thrown away. Alternantheras that have been struck from cuttings, or plants that have been taken up from the flower garden and potted, should be kept in a growing temperature of from 50° to 55° in the night and supplied with water as required. If maintained in a healthy state through the winter, they will furnish an abundance of cuttings in the spring.

Vallotas.—These easily-grown, handsome, flowering bulbs should, during the next three months, be kept somewhat drier at the roots; yet, as they are an evergreen species, the soil must not be allowed to become completely dried up, or the leaves will flag, which will have the effect of causing them to turn yellow and fall off before their time, which would not only prevent their fully blooming the ensuing summer, but would also considerably reduce the strength and size of the bulbs. This is one of the best subjects for those who require plants in flower to decorate sitting-rooms. A 9-in. pot will hold four or five full-sized bulbs of Vallota that will continue in bloom for a month. It is easily grown and readily propagated, increasing quickly through the production of numerous offsets, which are formed every year at the base of the old bulbs. These, when about the size of large Peas, will have made two small leaves each and a small root or two. They should be placed, eight or ten together, in 6-in. pots, well drained, in ordinary sandy loam, in which they may remain for a year or eighteen months. Like the flowering bulbs, they must not receive so much water during the winter as in the growing season.

Violets.—If a few of these that have been prepared during the summer be now lifted with balls of earth so as to disturb their roots but slightly, and transferred to 6-in. or 7-in. pots, they also should be accommodated in a frame, from which, if required, they can be removed to the greenhouse, or a dwelling room where their fragrance will be appreciated. In all cases with plants of the above description that at this season are kept in frames, it is essential that they have abundance of air by removing the lights for a few hours on fine days, and tilting them when it is wet; if this precaution be not taken they will become drawn; aphides also increase much faster where there is an insufficiency of air admitted; dip or fumigate as soon as the presence of this pest is discovered.

Flower Garden.

Lifting and Storing Dahlia Roots.—In many parts of the country Dahlias have escaped being cut down by frost much longer this autumn than usual, and there is often a disposition to allow them to remain undisturbed as long as they continue to flower; but, as soon as the tops are destroyed by frost, the roots should at once be taken up. If, on the other hand, they are allowed to remain for a time in the ground the result is the latent eyes that exist round the base of the stems, and intended to form shoots for the coming season, are at once started into growth. To such an extent will this sometimes occur, that no eyes remain from which the plant can make growth in the spring, although the tubers may be quite sound. These dormant buds are very often destroyed by the following bad practice. When the tops are cut off at the usual distance of 8 in. or 10 in. above the ground, and the roots lifted and placed with the stems upwards, the sap continues to ascend, and oozes out where the tops have been severed, running down and keeping the remaining portion of the stem wet, which causes it to rot and turn mouldy right down to the bottom, and kills the buds at the base. To prevent this, the roots, when taken up, should always, for a time, be placed top downwards on a shelf in an empty Vinery or dry shed, where they will be beyond the reach of frost, or they may be hung up on nails in a similar position against a wall in any dry, airy building, the object being to get them dry without delay, after which they may be stowed away in any place where there is no possibility of their getting frozen, or of the roots becoming too dry and shrivelled, to prevent which they can be covered over with dry Fern or straw. At the time of taking them up, see that the names are legibly written on the labels, which should be secured to the stems with wire, as twine or bast, when used for this purpose, often rots during the winter.

Herbaceous Lobelias should now be taken up and placed either in pots or boxes as closely as the crowns can be got together, with a little drainage underneath, and just as much soil round the roots as will keep them moist; this will be found much better than heeling them in under stages in greenhouses or similar places, where they are too much in the dark, and receive an excess of water that drips from the plants above. These fine old, late, summer-flowering subjects are not nearly so much grown as they should be; they are easily managed, increase readily, take up but little room during the winter, and they will live through the winter anywhere out of the reach of frost.

Tritomas are not safe in the open ground from frost in many parts of the kingdom, and, even in the most favoured localities, if it be desired to increase them they should be now taken up, the crowns divided, placed singly in small pots, and plunged in coal-ashes in a frame where they can be so far protected as to keep the soil from being frozen; this latter precaution should always be taken, even in the case of plants that are quite hardy; when their roots are in a pot they suffer much more from frost than in the open ground: this at first sight may appear unaccountable, but the way it occurs is thus explained: When the soil is confined within the restricted limits of a pot, it has not room to expand when frozen in the same way as when in an unconfined position, the result of which is that an inward compression takes place which crushes the roots within it; from this it will be seen that even the commonest plant should not be allowed to have the soil frozen about its roots when so placed.

The Christmas Rose (Helleborus niger), with its improved variety, H. niger maximus, are well worthy of extensive cultivation, flowering, as they do, at a time when outdoor flowers are scarce, and during a festive season when they are so much required and appreciated. With but little care or attention these plants will continue to bloom throughout the entire winter should the weather prove moderately mild, and even during severe weather the protection of a few hand-glasses or a frame will generally insure an abundance of fine, large, and pure white blooms from the beginning of December until the early part of March. Christmas Roses are of easy culture and by no means difficult to increase. Early in spring large roots or patches may be unceremoniously cut into moderately small pieces with a sharp spade and planted out singly, where they will soon become well established plants, and will flower freely during the following and succeeding winters. When all fallen leaves have been cleared from lawns and similar places, it may, in some cases, be necessary to again pass the mowing machine or the scythe over the Grass, and if the principal gravel walks, or those in immediate connection with the flower garden or the residence, are found to be considerably soiled through decaying leaves or worm-casts, or where the surface may have become covered with Moss, a portion of the surface should be scraped off and should be replaced with a thin coat of clean gravel, which will tend to give the whole an appearance of cheerfulness during the winter.

Lily of the Valley.—This favourite plant is seldom really well managed out-of-doors in this country, except by those who grow it for sale. To the fact of its naturally hardy constitution, enabling it to exist in any out-of-the-way place with the least possible care and attention, may be attributed its frequent neglected condition. The Lily of the Valley has the character of enjoying partial shade, and through an impression that this is necessary the position chosen for it is often so near trees or shrubs, the roots of which impoverish the soil to such an extent as to prevent it from receiving more than a quarter of the nutriment necessary to enable it to form stout flowering crowns. Another source from which a weakly state arises is through the plantation of Lilies of the Valley being permitted to remain too long without removal until crowded together in a way that precludes the possibility of their attaining the requisite strength to produce healthy and vigorous blooms. The present is a good time for planting; choose a piece of good ground completely away from the influence of the roots of trees, dig it thoroughly 15 in. deep, working in plenty of rotten manure; if the soil be heavy, add 2 in. or 3 in. of sand or road grit. In removing the plants from the old bed it will be well to select those with the strongest crowns for forcing this season, dividing the remainder of the strong from the weak, and planting them separately. Open shallow trenches 12 in. apart, allowing 6 in. between the crowns in the rows, cover with 2 in. of soil, on the surface place a mixture of rotten manure and leaf mould, for although the plant (being a native of Britain) is necessarily quite hardy, yet in common with all those that are moved in autumn, it is better to protect the roots from severe frost. Some growers plant early in the spring, just before the Lily in question begins to grow, but after trying both plans I prefer the present season for that purpose. Strong crowns are essential to the production of fine flowers; to insure these plenty of water is necessary in dry weather whilst the leaves are green in summer. Keep them quite clean from weeds; the plants will increase fast, and in the course of two or three years, when the ground becomes too full, take up, thin out, and replant. For forcing always select the crowns with round, plump buds, as these only will bloom.

Herbaceous Borders.—Most of the plants here will shortly be in a condition to have their tops removed; this is necessary for appearance sake, but is not justifiable upon any other grounds. The tops, although they may have no vitality in them, afford protection to the roots and dormant buds that lie thickly about the crown just under the soil. When the old flower shoots are removed, the crowns sometimes suffer in two ways, first, from the absence of shelter that would be afforded were the tops allowed to remain, and also from another and often more serious cause. In many cases the stems are hollow, and, when these are cut at 1 in. or 2 in. above the ground, they get filled with water down to the bottom, right to the very point where the buds are formed that are intended for the ensuing year's growth. To inflict as little injury as possible in this manner care should be taken in the first place never to remove the tops from a plant whilst there is any vitality in them; for, until dead, they must impart strength to the roots, and, when in a condition for removal, they should never be cut so close as is generally practised. Instead of severing them near the surface leave them 8 in. or 10 in. high; so treated they will not be an eyesore. In the case of anything that is at all tender a little dry Fern or litter may, with advantage, be placed round and over the crowns. All weeds should be removed by hand and the ground raked; but, in places where there are yet any leaves to fall from deciduous trees, anything in the shape of mulching over the entire surface should be deferred until all the leaves have fallen and can be cleared off; as, if the mulching is put on whilst the leaves are yet falling, it is afterwards a difficult matter to clear them off.

Indoor Fruit Department.

Vines.—Placing bunches of Grapes in bottles of water to preserve them during the winter is a system often practised, and under certain circumstances it possesses many advantages. In Vineries full of plants, and where there are many Grapes hanging, it is impossible to keep the atmosphere sufficiently dry to prevent the fruit from rotting, and in such cases it is much better to cut the fruit and bottle it than to let it spoil on the Vines. Many old Vineries, too, are far from being waterproof, and, consequently, ill adapted for keeping Grapes. Moreover, where there are only, as often happens, a few dozen pounds of fruit hanging in a large house, from which it would take a great deal of firing to keep out frost and damp for any length of time, cutting and bottling may be profitably resorted to. In cutting bunches for this purpose from 4 in. to 6 in. of the shoot between the main stem and the bunch should be removed along with the fruit. This piece of wood is placed in the mouth of the bottle, which may either be laid down in a slanting direction, so as to allow the bunch to hang over the edge of the shelf or whatever else may be best. Pint bottles suit most bunches, and they need not be quite filled with water; on the contrary, if the end of the shoot is covered that is sufficient. In order to prevent too much water from passing through the wood, the cut end may be half charred before it is placed in the water. A fruit room in which Apples and Pears keep well is a good place in which to put Grapes bottled in this way. The atmosphere about them should be kept dry, and the temperature should not be allowed to fall below 40°. They should also have air and plenty of light on all favourable occasions. Under this treatment few berries will decay, and their flavour will not deteriorate much. Grapes may also be kept by cutting the bunches as if for bottling, and running the cut end of the wood into a fresh Potato. Thus circumstanced, they may be hung up in a room like that to which reference has just been made. This plan is, however, not so good as bottling. When the bunches are cut for these purposes, the Vines should be pruned at once, and all cleaning required should be done. Grapes need not be cut merely for the purpose of relieving the Vines which do not suffer through fruit hanging on them, even until the buds begin to swell the following season.

Plant Vagaries.—What is one to think of learned and professedly scientific men who talk such nonsense as that quoted in The Garden of last week (p. 450) from a lecture of M. Alphonse Lavallée, delivered before the members of one of the Paris colleges? First, we are told that "shrubs and underwood generally will thrive and flourish when planted under Beech trees, but will not even live when planted under the shade of the Walnut;" and, secondly, that "Nettles will only thrive in the immediate vicinity of human habitations, and that when these are removed the Nettles move too." Not one of these statements is true. In the first place, underwood does not thrive and flourish under the Beech; it is the worst tree in the forest for injuring and destroying such, for which reason sportsmen detest it, as cover cannot be grown where it is planted extensively. As to the Walnut, underwood take to it kindly. Not far from where I write there is a tall and shadowy Walnut tree, round the trunk of, and in close contact with which, Rhododendrons, Hollies, and Laurels form an impenetrable thicket, and they have been there for more than twenty years. With regard to Nettles, it is true they often take possession of waste heaps and places near dwelling houses, where they are not disturbed, but they just grow as well about the open skirts of the woods, and in the fields, and elsewhere, as I could show any summer, only in the fields and about the hedgerows the farmers keep them down as much as possible by cutting them over or putting a handful of salt on their roots, as I have often seen them do. It is such statements as those of M. Lavallée that help to bring the teachings of scientific men into contempt.—J. S. W.

The Gold Medal Boiler.—Mr. B. S. Williams gives an excellent account of this boiler, which he has used in his nursery for several years. It never gets out of order, and it burns any kind of fuel that comes in its way.

Mechanism in Plants.—I send you a tendril from a Passion Flower which is a perfect helitic or spiral spring. The helitic spring is in general use in the construction of various classes of machinery, and it is not at all improbable that the plant production in question, or some similar one, may have given rise to the adaption of its form to mechanical appliances.—J. A. H., *Gateshead.*

The Weather in the Midland Counties.—Already 11° of frost have been registered here, and a considerable depth of snow has fallen. Whether it is to be really a hard winter or not I cannot predict, but if so, we have not many berries for the small birds to feed upon. The foliage of many of our Oaks is still green, as was the case in the late autumn of 1860, which many have cause to remember. J. Miller, *Clumber.*

TREES, SHRUBS, & WOODLANDS.

AUTUMN TINTS ON FOREST TREES.

Beautiful and distinct as are the leaves of many of the choice exotics which adorn our gardens and shrubberies, yet in the blending of the autumnal tints of our indigenous park and forest trees there is an appropriateness to the season which we look for in vain among the occupants of the close-shaven lawn; and as it is with the native trees that the forester has principally to deal, and to them that even the landscape gardener must trust for shades to produce his most permanent effects, a few remarks suggested by a ride through Surrenden-Dering Park, in Kent, on the 2nd inst., when the noble trees with which that park is so profusely studded had attained the climax of their autumnal splendour, may interest the readers of The Garden. Passing the front of the mansion, the only piece of "verdant sculpture" about the grounds is to be seen in the closely trimmed and compact Yew hedge which shelters the south terrace from the east and north-east winds. Looking thence across the west terrace, towards the garden front of the house, and through a network of the already bare twigs of a spreading Acacia, the yellowish-green of a handsome deciduous Cypress contrasts strikingly with the rich dark green foliage of a towering Wellingtonia, while rising behind and far above both is a dense and darker mass of Elm and Silver Fir. Near the centre of the lawn a fine Tulip tree presents a compact array of leaves of a somewhat pale orange tint, and close by an ancient Cedar forms a striking foreground to a belt of Oaks, which, in their turn, are overtopped by some stately Silver Firs. Near at hand a graceful Deodar rises from a profuse mass of Portugal Laurel, its bright green showing a well-defined outline against the dense and rolling masses of partially-withered Sycamores. Carrying the eye onwards, we observe a fine belt of Ilex, Beech, Spanish Chestnut, Elm, and Ash, enlivened by the last glories of a Virgilia lutea and the bright blue of a row of slender Eucalypti. Looking still further southwards, towards The View, from either side of which "grove nods to grove," we observe in the distance that from each of two fine stools of Oak half-a-dozen stately stems spring up, and these, crowned with all their summer verdure, stand out boldly against the russet tops of the trees in the distant Benacre Wood. Near the top of The View one handsome Beech tree, with its uppermost branches bare, and its lower ones clothed outwardly with an abundance of golden-coloured leaves, is being swayed gently by the wind, and still reveals within a wealth of verdure. From either side bright branches of Hornbeam protrude through the dark masses of Oak, and on the left a graceful Ash of the liveliest green stands amongst some wide-spreading Plane trees, whose yellow leaves descend in showers to mingle with those which already form a russet carpet beneath. A dense mass of Hornbeam intermixed with Oak and Ash bounds the park on the south, and here and there a Maple pushes forward a branch with leaves as pale a yellow as the first spring Primroses. Over a sheltered lake, which reflects the slender stems of a grove of young Oaks beyond it, hang an Aspen with its yellow and russet leaves trembling in the breeze, a Birch with bright stem and dusky top, and a low-branched Alder of the deepest green. Still further to the left, and standing midway between a grove of handsome and still green Oaks, and a cluster of exposed and purple-topped Beeches, a small-leaved Maple and a free-growing Hornbeam spring up together, and as the latter overtops and also flanks the former, the Maple in the full blaze of the setting sun looks like a mass of burnished gold surrounded by a framework of bronze. From the front of the mansion the view across the park to the east discloses the principal elements necessary for the formation of a perfect landscape, water excepted. Here is unity, uniform verdure, an undulating surface, and that variety in planting which divides the whole picture into several compositions. A few single trees of fine dimensions are to be seen on every side, but the greater part of the surface is covered with irregular clumps and groups, such as Claude delighted in introducing to his landscapes. The lights and shades which play upon these are heightened by the effects of judicious thinning, and the groups themselves are sufficiently profuse to give animation without overcrowding, and thereby disfiguring the scene, while by their variety they gradually retard the vision until astonishment develops into admiration. One large clump in particular, which stands upon a distant eminence, and is composed of Beech and Ash in the foreground and Oaks behind, opens towards the spectator, so that the darker trees give an appearance of greater depth to the recess, while the more lustrous Beech and Ash glow as brightly in the sunshine as if some luminary had entered the recesses of the grove,

> Leaving its splendour on the jagged porch.

There an Ash, light and airy, rises from the same spot as a dwarf and gnarled Oak, which it overtops; here a twisted Hawthorn at the foot of a tall Oak which it nursed up clings like a decrepid nurse to the foster child which no longer requires her assistance. Far away in the distance a sombre and apparently impenetrable mass of Firs, straight and formal in its outline, crowns the summit of the hill which overhangs Westwell, and favourably contrasting with this the lofty Beech Wood, which occupies the higher ground above Eastwell Park, stands prominent, the boles bright and the tops one glow of radiance, while here and there small clumps and single trees break away from the mass above and flow, as it were, negligently over the bosom of the slope. A. J. Burrows.

SEASIDE PLANTATIONS.

Mr. Burrows (p. 427) mentions a fact that has not been so often noted as one might have expected, viz., the difference in the hardiness of evergreen and other shrubs on the east and west coasts respectively of Scotland and England. On the west coast, near to the sea, and in places within reach of the spray in rough weather, I notice that the Sweet Bay, Golden Holly, Arbutus, Laurustinus, Evergreen Oak, Aucuba, Hydrangea, Fuchsia, and the Tamarisk everywhere succeed best, some of these, indeed, like the Hydrangea, Laurustinus, Sweet Bay, and Evergreen Oak, doing better near the sea than anywhere else, while among climbers the Ivy and the Passiflora cœrulea grow very freely. When we turn to deciduous trees, however, so far as I have observed, we find them thriving better on the east coast than on the west—probably because the gales are less severe. In and about the watering-places on the west coast, deciduous subjects, like the Beech, Elm, Laburnum, Plane, Hazel, &c., make some little growth annually, but they are hardly in leaf before their foliage gets blackened and withered by the blast as if a severe frost had passed over them; and this applies to the coast right away from the Solway Firth to Holyhead, at least, wherever the trees are exposed and not far from the sea, as I have myself noticed at different times. The tree that thrives best is the Willow, and on some Lancashire estates it is planted in belts on the seaward side of the plantations; it thrives amazingly and does not seem to be the least affected by the gales. On some parts of the east coast, on the other hand, mixed plantations of deciduous trees grow freely, and attain a good size quite near the seaside. If I remember correctly, such examples will be found on not a few parts of the coast between Edinburgh and the borders and further south, and also on the shores of the Firth of Forth, up which north-eastern gales sweep with considerable velocity, but not so fiercely as the hurricanes do on the west coast. Shelter, indeed, seems to be the chief desideratum in seaside planting. Wherever the force of the hurricane is broken, there the trees are tallest and most luxuriant. The strength and frequency of the gales on the west coast may be guessed from the height and extent of the blown sandhills, which, on some parts of the Lancashire coast, extend in a lofty and unbroken line for many miles wherever the shore is flat and sandy; indeed, these hills now form a good shelter in themselves in some localities, and plots of farm and garden land are being taken up behind them where it would have been impossible to cultivate anything at one time. In one such locality, I am told, an enterprising market gardener has started an extensive Asparagus garden that promises to be a most successful undertaking. J. S. W.

Lombardy Poplars for Lightning-rods.—Professor Asa Gray sends us "American Agriculturist" the following note: The reason which lies at the bottom of the general belief, on the Continent of Europe, that lightning strikes the Lombardy Poplar trees in preference to others, is coming to light. Green herbage, and green wood—sappy wood—are excellent conductors of electricity. A tree is shattered by lightning only when the discharge reaches the naked trunk or naked branches, which are poorer conductors. An old-fashioned Lombardy Poplar, by its height, by its complete covering of twigs and small branches, and their foliage, down almost to the ground, and by its sappy wood, makes capital lightning-rod, and a cheap one. Happily no one can patent it, and bring it round in a waggon, and insist upon trying it. To make it surer, the tree should stand in moist ground, or near water; for wet ground is a good conductor, and dry soil a poor one. It is recommended to plant a Lombardy Poplar near the house, and another close to the barn. If the ground is dry, the nearer the well the better—except for the nuisance of the roots that will get into it.

THE FRUIT GARDEN.

WINTERING STRAWBERRY PLANTS IN POTS.

"Cambrian" in his remarks upon this subject (p. 344) recommends that they should be left out-of-doors until the time when they are required to be placed in heat, but, judging from my own experience, I think it will be found that the grower will have to modify his practice according to the condition in which his plants may be. If they are thoroughly well rooted, then they not only do not receive injury from continuous rain, but really appear to revel in the extra moisture; whereas if the pots be not crammed with fibre they will suffer much from heavy showers. It is the custom in most establishments to lay or pot single crowns in 6-in. pots, employing a rich, unctuous compost, consisting of loam and manure. If strong runners be taken early, and the plants well attended to, they will probably be all that can be desired in the autumn; but it often happens that from various causes this result is not achieved; the pots do not become thoroughly full of strong roots by the time when the autumn rains commence; and from the fact of the rich manurial element of the soil being unexhausted many of the fine roots perish. Such plants I know from experience will often suffer so much that when introduced into the forcing house they fail to start with the requisite amount of strength. They should therefore be so placed that the amount of moisture which they receive may be regulated at will. Protection is not coddling. The former is sometimes necessary, the latter is at all times reprehensible. I prefer myself to place the plants in frames by the latter end of October, merely covering with the lights in heavy, continuous rains, or in very severe weather. Air should never be taken off unless the frost be very penetrating or accompanied by harsh, drying winds, as I have found that a continuance of biting, drying wind playing upon the foliage saps the vitality of the plants to such an extent that they are of but little service afterwards. More especially is this the case if the soil in the pots has become dry and frozen, the crowns then shrivel, and are thus quite incapacitated from yielding a crop. A large proportion of the Strawberry plants here are grown two and three years in the same pots, and it is found that they make roots of a description that no young plant can do, being of such a thick and wiry nature that no amount of rain can possibly injure, and when fruiting they may be set in pans, and the latter be filled up with water without fear of injury arising therefrom. These plants are oftentimes not much to look at; the crowns do not attain that grossness observable in young runners, but they mature better, and the extra strength of root causes them in the forcing season to far outstrip those of finer proportions. Owing also to the amount of manure water which may be administered, a much heavier crop is obtainable from them. I fully agree with "Cambrian" that dryness in the winter is fatal to fertility in the spring, but exclusion of light, if only for a brief period, I have found equally injurious. Some years back a number of good rooted plants were plunged in the open air. A period of hard frost set in, and they were covered with some litter. It froze night and day for upwards of a week, and when uncovered it could be easily seen by the yellow tinge of the leaf that the foliage had suffered. The effect of this deprivation of light was plainly observable at forcing time. When in frames the snow may be brushed off, and the plants do not suffer. I remember once allowing the snow to remain on some frames for a few days, thinking, as the frost was very severe, it would be some protection. I would never do so again; the foliage suffered even in that short time. I have always found that any deficiency in health in the leaf at starting time is sure to be attended by a languid root-action and a consequent falling off in the crop.

John Cornhill.

The Ickworth Imperatrice Plum.—We are just finishing off our stone fruit dessert for the season with this excellent Plum, which is hardly equalled in quality by any other, rich as the Plum family is, in flavour and general excellence. Such Plums as the Jefferson, Coe's Golden Drop, and Reine Claude de Bavay leave little to be desired. And yet the Imperatrice has a vinous richness of flesh and flavouring that none of these possess. Of course, too, its extreme lateness renders it all the more valuable. We have had Coe's Golden Drop from ground cordons up to November, and the Imperatrice until now (the 12th), all from the open air. Plums in the middle of November are always highly appreciated, and yet the Imperatrice is but little grown. Perhaps the chief reason of this is that it is a shy bearer. As a rule, the trees seem to fruit but little till they get old, nor then, unless forced into fertility by root pruning or confining. It is also a Plum that drops more freely after apparently setting than most others. It is well to assist the fruit through this critical crisis by copious root waterings and top syringings with the garden engine. The leaves seem almost as sweet as the fruit, and to attract aphides in unusual numbers; being also somewhat smaller than the leaves of most Plums, they are the more easily injured or eaten up. It is, therefore, of the more importance to watch for the first appearance of fly, and destroy it at once with Tobacco water, or a deluge of clean water applied with such force as to wash it off at once. Beyond this stage the Imperatrice Plums need no particular attention, only to leave the fruit on the trees till they are partially shrivelled. Their flavour is hardly developed till they reach this stage, and, indeed, not till after being gathered a week or two and stored in a dry Vinery, or other house or room in a temperature of 60° or so. The more, in reason, the fruits shrivel, the richer their flavour, though it is better not to carry the shrivelling process too far, as it reduces the size and injures the appearance of these most luscious of all Plums. Slightly shrivelled and served with light-coloured leaves, with the heavy bloom left untarnished and intact, there are few more interesting and useful fruits served at the best tables than these fine late Plums. —D. T. Fish.

The Ansault Pear.—This Pear, a French variety, is highly praised, and stated to be as good as any, if not the best of all, Pears.

Have any of our readers tried it? Those who describe it as above in the "American Agriculturist" are the best of judges.

PRUNING FRUIT BUSHES.

The plan of cutting the young wood of Gooseberries and Currants close in to the main shoots, and leaving nothing but a few young spurs, is the mode of pruning most commonly practised, but it is questionable whether or not this is the best way of pruning to secure fine crops. I have tried bushes side by side pruned in this way, and others in which was left a good quantity of young wood, and the latter invariably bore the best crops, both as regards quantity and quality. Cutting most of the young wood off limits the fruit-bearing proportions of a tree very much, and I could name a good many instances in which aged bushes were killed altogether by annually persisting in cutting away all the young wood. The worst and common way of pruning bush fruits is to cut in all the side shoots to one eye or two from the old wood, and finish off by cutting the leading or top shoot some 2 in. long. The best and most fruit is produced by the few young buds that are left, and any one may understand that to leave more young buds would be a certain means of insuring more fruit. Besides, to keep up the strength of a bush or tree, it is necessary that young wood should be allowed to develop itself in some way or other, but, as a rule, this is not taken into consideration. I have said that close cutting in is the worst way of pruning. Now, I consider the best way to be never to leave the wood too close together; leave the young shoots at least 4 in. long, and the top or leading shoot 10 in. or 12 in. long. Cut out some of the old branches every year, and allow one or two of the strongest of the young ones to take their places. Let those interested in the matter try this plan, and observe the result. The finest crops of Gooseberries and Currants which I have ever seen were growing in a garden not far from where I now am. The bushes had been allowed to grow so freely that they were in the form of small trees; the branches were not crowded, and the fine, large fruit was hanging in closely-packed rows and clusters, some 6 ft. in length. I am strongly of opinion that where the close cutting in of Apple and Pear trees is practised, as it is in many places, it is as injurious to the trees in the way of producing canker and other diseases and short crops as it is in the case of Gooseberries and Currants. CAMBRIAN.

GRAPES WITHOUT FIRE-HEAT.

Good Grapes may and have sometimes been produced in this country without the aid of fire-heat, and also without the elaborately-prepared borders, which are generally considered necessary for the roots of the Vines. Much of the success or failure, however, of such experiments will necessarily depend upon certain circumstances or conditions, such as the character of the soil, the situation, and the varieties of Grape Vine selected for the purpose, and, above all, the character of the season, which, unfortunately, the cultivator cannot in any degree control. To justify the expectation of the Grape Vine succeeding in the ordinary soil of a kitchen garden, it is necessary that the same should be of good depth, moderately rich, and neither too light nor too heavy, but if at all inclined to the latter condition it should be efficiently drained, and it is only in the south or south-eastern portion of the island that success can be very confidently expected. At all events, I should hardly think the experiment worth trial north of the Trent, nor yet in the moist climate of the western counties. The selection of sorts should be confined to the most hardy and the earliest ripening varieties, such as Royal Muscadine, Dutch Sweetwater, Grove End Sweetwater, or Early White Malvasia; Black Cluster, Esperione (an excellent variety, nearly equal to Black Hamburgh), Frankenthal, and possibly a few other kinds.

At this place there is a span-roofed, unheated orchard house, 90 ft. long, 20 ft. wide, 12 ft. high in the centre, and 6 ft. at the eaves. This is planted with fruit trees such as Peaches, Nectarines, and Cherries. A paved path 3 ft. wide makes the interior into a central pit or bed of soil, while a border of soil 3 ft. wide occupies each side of the structure. Some eight or nine years ago it was resolved to train a single Vine rod to a strong wire over the centre of the pathway under the glass, and at a distance of 14 in. from it. The soil inside the house being devoted to the roots of the fruit trees, it was thought unadvisable to plant the Vines inside, and it so happened that on each side of the house was a gravel walk some 8 ft. wide; but as the Vines were to be planted more for the sake of appearance and to supply leaves for garnishing than for any expectation of obtaining ripe fruit from them, it was considered unnecessary to be at much trouble with them. The gravel was therefore merely removed from a portion of the walk where a Vine was intended to be planted to the width of 4 ft.; the subsoil was then loosened up, one or two barrow-loads of good soil was placed upon it, and in this the Vines were planted, the rods being introduced to the inside of the structure through a hole made in the brick wall a little under the surface of the walk, while the roots were directed, as it were, to find their way into the soil of the open quarter or border, and this they certainly appear to have done. The disturbed gravel was again levelled in, the walk was rolled down, and no further trouble as regards the roots has been found necessary. The wire stretched above the pathway was very soon entirely covered by the Vines, which are annually pruned upon the short spur system; the young shoots are all stopped at a joint beyond the bunch, and as soon as the shoots will bear it they are tied in close to the rod. No leaves are allowed to form upon the portion of the rods which lead to the wire, and they are consequently unobserved, while a single rod well furnished with fruit, passing all round a structure of such dimensions, has a very ornamental appearance, and does not in the least degree interfere with the development of the fruit trees planted inside the house. I ought to have stated before that the house in question runs north and south, and that the Vines trained above the east pathway are all of the Black Hamburgh variety, while those over the west pathway are the Royal Muscadine. The latter has never once failed since the Vines became fairly established to produce an annual crop of excellent fruit thoroughly ripened, while, on the other hand, the Black Hamburghs, although they have never failed to carry a heavy crop of fruit, have not always thoroughly ripened it. Some seasons, however, and the present is an instance in point, they have ripened their fruit as well as could be desired. It gets jet black, carries a beautiful bloom, and its flavour is really very good, while it appears to keep better than fruit of the same kind in other houses which have had the benefit of fire-heat. P. GRIEVE.

Culford, Bury St. Edmunds.

PEARS FOR THE NORTH.

In the Cleveland district of Yorkshire the small summer Pears are those mostly grown, especially for market purposes. I refer chiefly to the Green Chisel, Crawford, Citron des Carmes, Doyenné d'Ete, and Hessle, all of which ripen perfectly and realise fair prices. The fault of these Pears is, they are too small, and this fault is greatly increased by allowing the trees to bear too heavy crops. This is particularly the case with the Green Chisel and the Hessle, which are often so small as to be unsaleable, but when fair samples are offered, these Pears sell readily at the highest prices and are the most certain croppers. The Yat is another handsome old Pear. Last year, when Pears were a failure here, the Yat bore a fair crop and this year a full crop of finely-coloured fruit. Beurré Giffard is a good Pear, but not much seen in the Stockton or Middlesborough markets. Of other well-known sorts of Pears grown here, Muirfowl Egg, Louise Bonne, and William's Bon Chrétien are the best, but they do not come up to the appearance of the same varieties grown in the south. On walls Beurré Diel and Winter Nelis come up to the highest standard of any Pears that I have seen in Cleveland. CHAS. M'DONALD.

Stokesley.

—— It does not at all surprise me to hear, as Mr. Hinds asserts, that Gansel's Bergamot Pear does well as an espalier, as that kind is well known to be a free-growing variety, but it would greatly surprise me to learn that fruit obtained from such trees in northern districts was ever fit for dessert. The fact, too, of Easter Beurré, Beurré Rance, and Ne Plus Meuris, grown as standards, having fruited freely with Mr. Hinds, as he states, is quite beside the question at issue, for no one doubts their free-cropping properties, but what is the use of having them in a collection if they never finish up fit to be eaten? That my condemnation of them, and others mentioned, as dessert fruits was right is proved by "J. S. W.," who fully endorses the greater part of what I said respecting the sorts enumerated and the amended list which I gave. S. D.

New Grapes.—I am glad to see the Golden Queen Grape so well spoken of from so many different quarters, as most people of late have become very chary about planting fresh sorts, so great has been the disappointment many of those sent out during the last few years have caused. I cannot say anything myself as yet respecting the fruit of the Golden Queen, but that it is a fine, vigorous grower, having stout, leathery foliage, I can bear witness, as one which we have here has made a magnificent rod, and carries such leaves as always gladden the heart of any cultivator who takes any pride in his Vines. I was much struck some time ago with some bunches which I saw of the Alnwick Seedling; the berries were large, of a magnificent jet black, and carried that fine bloom so characteristic of well-finished Grapes. As I had not the opportunity of tasting it I should be glad to hear before planting it what some of our best growers think of it, as I do not care to incur the loss of time and space in trying any new kind that may have to be routed out or grafted just as it ought to be in full bearing; and no doubt there are numbers of others who have the same feeling in this respect as myself, and who are only waiting till they hear further trustworthy accounts from those who have this variety. In large places, where there are many Vineries, the loss of a rod is not often an object, but where glass is more limited and the demands for fruit great in proportion, it is a serious matter, and often puts growers to much inconvenience and trouble. To compare notes, therefore, is a great help.—S. D.

Mealy Bug on Vines.—Paraffin has been vouched for as a sure and safe remedy, if carefully applied, by so many practical men, that we may safely advise you to use it. As soon as the Vine leaves fall, clear the house not only of them, but also of all other plants that may happen to be therein, and give the stems of the Vines a good washing with the paraffin mixture, following this immediately by a thorough cleansing with pure water. To a wineglassful of the ordinary paraffin oil of the shops add 4 gallons of soft water; mix thoroughly and keep in constant agitation while being used. This may be done by allowing one person to draw and discharge again into the vessel, employing a second syringe for this, while another person draws while the liquid is thus agitated, and discharges it on the Vine stems and over all the woodwork of the house. Wherever it touches the mealy bug it is certain death. If on pruning you find any have been left behind give a similar washing later on, and afterwards paint with Gishurst Compound as a check upon other vermin.—"Gardeners' Chronicle."

IN THE TROPICS.

We are pleased to say that Mr. F. W. Burbidge is home after a long journey in parts of the Eastern Archipelago, exceedingly rich in interesting plants. The following extracts from a private letter from him, written on his way home will, we feel assured, prove interesting to many of our readers:—

"How I did revel in the fruits obtainable during September in Singapore!—Durian, Langsat (here sold under the name of Duku) Bananas, with a richness and freshness of flavour and perfume utterly indescribable. One variety of all others is especially noble in appearance and excellent in taste, viz., Pisang Rajah, a Malay name signifying King of Bananas. Excellent Persimmons were in the markets; this is the Kaki fruit of China and Japan (Diospyros Kaki) which you know well. These fruits are imported to Singapore from Hong Kong and were in excellent condition, plump and unbruised, of a deep Tomato-like red colour with a delicate whitish bloom. The flavour is delicious, reminding one of a well-ripened Apricot, but with a slightly astringent after-taste. There is another tropical fruit, however, which this Kaki fruit still more resembles, viz., the large, Orange-like fruits of a caoutchouc-yielding plant called "Manungau" by the natives of the Malay Peninsula, and which is supposed to be borne by a species of Willughbeia. Rambutan and the Mangosteen were plentiful, as were also green Oranges and delicate pink-fleshed Pomoloes from Siam. The Pomoloes of the East are far superior to those of the West Indies, having, indeed, a rich, juicy, Grape-like flavour peculiarly their own. No one would detect a suspicion of the flavour of Muscatel Grapes in the Pomoloes now so commonly imported to Covent Garden Market, but the peculiar Grape-like aroma and flavour of the Labuan and Siamese varieties of this fruit can be likened to nothing else. Very fine samples of Apples from Australia were also obtainable, and Chinese Pears likewise imported were plentiful, but their texture is that of a hard baking Pear when first gathered, and their flavour is very inferior as judged by our own standard. There are two varieties of these, an Apple-shaped fruit with a long stalk, and a short-stalked, russet-skinned variety, which is kept fresh by immersion in water. A few other native fruits, such as Tarippe (Artocarpus Blumei), Jack fruit (A. integrifolia), Rose Apples (Jambosa), &c., made up the supply. Here, in Port Said, the fruit is nearly all imported from the islands of the Mediterranean, or from France, nor is the supply so limited as one might suppose, seeing that, save Water Melons, Dates, and Pomegranates, Egypt produces but little fruit. Pears come here from the Paris markets, as also do many vegetables. Apples, Plums, Custard Apples, Sweetwater and Almerian Grapes, Cadiz Melons, and Pomegranates were tolerably plentiful, good in quality, and cheap; as, indeed, fruit or any other food produce invariably is when there is a constant and general demand for it, as there is here and in other hot, thirsty lands. Nowhere have I seen better Pomegranates, and few fruits are more grateful during hot weather, especially if their crystalline red pulp be eaten with the addition of a little red wine and sugar. How is it that this, one of the most distinctly handsome and classical of all fruits, is so seldom seen on English tables, seeing that they are now so plentiful in our markets? Doubtless, however, they would be far more generally eaten were they obtainable in good condition during our hot season. A golden-flowered Cassia was very showy in some of the gardens, and the freshest of all green creepers was the German Ivy (Mikania scandens), so largely grown in America as a window plant and for covering screens in rooms. A long-leaved species of Casuarina was very noticeable, and trees of it might readily be mistaken for those of the long-leaved Pinus. Different species of Casuarina are common shore trees throughout the East, where they replace the Conifers of temperate and cold climates, and not in appearance only, for the peculiar sighing noise of the winds through a plantation of Scotch Pines is exactly reproduced by these plants.

"I have been, I believe, successful in sending home alive most of the plants which I have discovered, and if I can land those I now have with me alive I shall be almost satisfied with the results of my journey. We are gliding through the Canal now, and the fresh green creepers—feathery Tamarisk, with its light foliage and delicate rosy plumes, and the masses of deep red-blossomed Oleanders—form a lovely contrast to the strip of blue sea-way and the red sandbanks on either side. It is hot here, but nothing compared with the Red Sea, just after one gets inside Cape Gardafui, where the thermometer indicated 110° in the shade under an awning on deck, and the temperature of the sea water was 92°. At Suez we got the first breath of really cool, satisfying, fresh air that we have had since leaving Singapore. Yes, the Tropics are hot at midday, and at times it does rain, but one never suffers from the sudden transitions of climate as in England. When I think of a thick yellow November fog in London, blanket-like in intensity, I shudder. Yet the tropical flowers, of which nearly all travellers (except Wallace) have said so much, cannot for a moment be compared with ours for general effect. For example, I do not believe I could name a dozen tropical flowers that have half the landscape effect of the Buttercups, Bluebells, Primroses, Myosotis, Violets, and the rosy-flowered Lychnis of English woods. During all my rambles in the East I have seen nothing fresh and spring-like—nothing like the gold of Daffodils on the young Grass, or the royal purple of an autumnal Crocus on its Mossy bed. This much is lacking in the forests primæval, and even in gardens—Eastern gardens—this unvarying sense of permanency in foliage and flowers is most evident; the same plants seem to keep up 'dribblets' of bloom all the year—the beauty of a ball-room belle in jewelled array, and jaded by a season's festivities. There is the refined beauty, true enough—Victoria Lilies and other Nymphæas in open air pools, the pink-blossomed Sacred Lotus also, and the noble Amherstia, with its pendants of crimson and gold, and all in groves of tropical Palms; but it is astonishing how soon one tires of this—how much one longs to sniff the fragrance of Pinks and Wallflowers, to stoop for a Violet or two from a Mossy bank, or a Snowdrop from a cottage garden. There is no gainsaying this point—the most beautiful and satisfying of all flowers are those of temperate climes.

"In dried specimens I have done something, and have no doubt that there is a fair proportion of new plants among them, especially Ferns, Mosses, flowering plants, and Orchids. Mr. Veitch has kindly sent most of them to Kew, with the exception of those I have on board with me. One thing about collecting is that it is exciting work—exciting to find a good plant; and then comes the anxiety to hear of its safe arrival at home. You would like to look over my cases here now—nearly everything in good condition. I damp them down with a syringe morning and evening, and find the work highly interesting. It is astonishing how much gardening one may really do on board ship; indeed, this steamer is to me a sort of large 'Wilson raft.'"

GARDENS IN THE WEST OF SCOTLAND.

Few places will more amply repay lovers of landscape gardening for a visit than the grounds of Earnock and Neilsland, the seats of Mr. John Watson, situated about twelve miles east of Glasgow, in the district of Hamilton. At the former place the quaint old garden is in itself a study, almost surrounded, as it is, by high rocks, evidently the remains of a quarry in bygone times. The surface is very irregular, and studded with old trees. In the lower part is a stream of water constantly flowing, which keeps the atmosphere moist and is conducive to the growth of trees and shrubs. Along the north side an old retaining buttressed wall exists; this was originally planted with fruit trees and flowering shrubs, but now it is a perfect picture, being densely clothed with the black Maiden-hair Fern (Asplenium trichomanes), some plants of which measure as much as 14 in. across, and all are in luxuriant health. Notwithstanding the quantity of this Fern growing here, no deviation from the original type is observable. This wall has at one time been formed to protect a terrace. The mass of damp soil behind (now covered with green Moss) renders it eminently fitted for the growth of Ferns. At various elevations in this remarkable glen numerous trees are to be seen, many of them of great age and standing singly. The trunk of one Scotch Fir measures 10 ft. 10 in. in circumference, rises 40 ft. in height without a branch, and is seemingly of a uniform thickness throughout. Several lofty Beeches may also be seen here, the trunk of the largest of which measures 15 ft. in circumference. A large pendent Yew, the branches of which measure 150 ft. in circumference, was only 20 ft. in height. Many other trees were observed, such as the Hemlock Spruce, variegated Plane, and purple Beech, but they were by no means remarkable for size. Fine old clumps of the original Rhododendrons, such as R. ponticum and R. Catawbiense, may here be seen in the form of bushes of noble dimensions, and probably from this circumstance the grounds round Earnock House have of late years been richly adorned with one of the finest collections of all the newly introduced Rhododendrons known, both species and hybrid varieties, planted in large, irregular masses. These are all doing well, and are covered with flower-buds for next year's blooming. This portion of the grounds is also richly studded with trees, but none of them the age of those just noticed. In the neighbourhood of the mansion numerous groups of equestrian and other statues have been judiciously placed amongst the shrubberies, many of which were recognised as originally belonging to the Forest collection, which for several years was exhibited in Edinburgh, each being cut out of one block of stone weighing many tons; therefore, getting them into position must have been a work of considerable labour.

From Earnock I visited the neighbouring estate of Neilsland, belonging to the same proprietor. It also contains many fine old trees, standing singly or in groups. Here large boundary belts have been planted, which in a few years will have a striking effect. New Conifers have been largely introduced, particularly Picea Nordmanniana, P. nobilis, &c. These are planted at regular distances apart from each other, and also from the boundary fences; and if thinning out be carefully attended to, these long belts will in time become highly interesting. It was on this part of the property that I inspected that most ingenious and remarkable structure, the Swiss cottage, which stands on a rocky eminence on the edge of a deep ravine studded with vegetation varying from lofty Firs to dwarf Alpine plants. The rockeries in the neighbourhood of the cottage are of a truly picturesque character, and admirably constructed to give the appearance of natural rocks. Rock plants of every description are here freely interspersed on the sloping sides, and all doing admirably. This Swiss cottage and its adjuncts are certainly a wonderful piece of rockwork engineering, covering, as they do, a large extent of surface, reflecting great credit on Mr. David Mitchell, Mr. Watson's adviser in all matters of landscape gardening. James M'Nab.

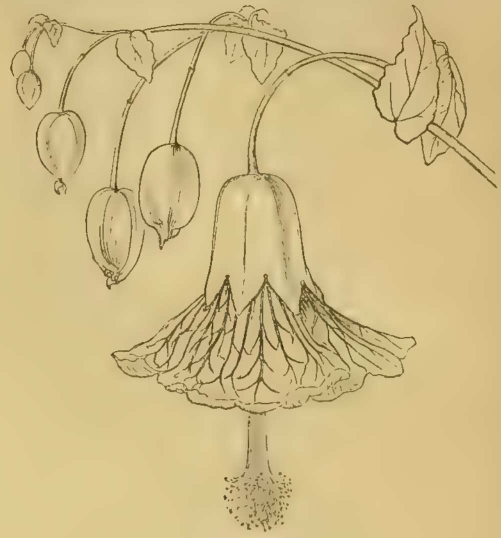
Royal Botanic Garden, Edinburgh.

Rustic Bridge without Nails.—Mr. Livesey, of Stourton Hall, Horncastle, has sent a photograph of a rustic bridge, the design for which he copied from a small view in Vol. I. of The Garden (p. 52). Everyone who sees it, he adds, is much taken with its neat and quaint appearance. It is of 27-ft. span, and crosses a narrow neck of water at the head of the lake where the supply comes in. We will probably at some future time have an engraving made of it for The Garden. Along with the photograph of the bridge came another representing a very fine Beurré Bosc Pear, trained horizontally and laden with fruit.

Todeas.—The culture of these handsome Ferns is in many cases limited on account of there not being in gardens suitable places in which to grow them. Any one, however, having a conservatory or greenhouse may easily cultivate them with little trouble or expense. Where beds exist in the conservatory, little semi-circular nooks may readily be formed in them by taking out some of the existing soil, and building all round with peat cut into convenient-sized turves. A sheet of glass should be placed in front and one on the top, and the Ferns, which may either be grown in pots or pans, and placed on a little white gravel, or planted out, will, if kept moist, grow vigorously, and, in some cases, succeed even better than those for which more elaborate provision has been made. The idea was suggested by Todea Ferns similarly situated in the large conservatory in the Royal Botanic Gardens, Regent's Park; there, overhung with the fronds of graceful Palms and other plants, they succeed well and have an interesting appearance. The walls of peat are rendered much more effective when covered with Club Mosses, small-growing Ferns, Fittonias, Ficus minima, and similar plants.—S.

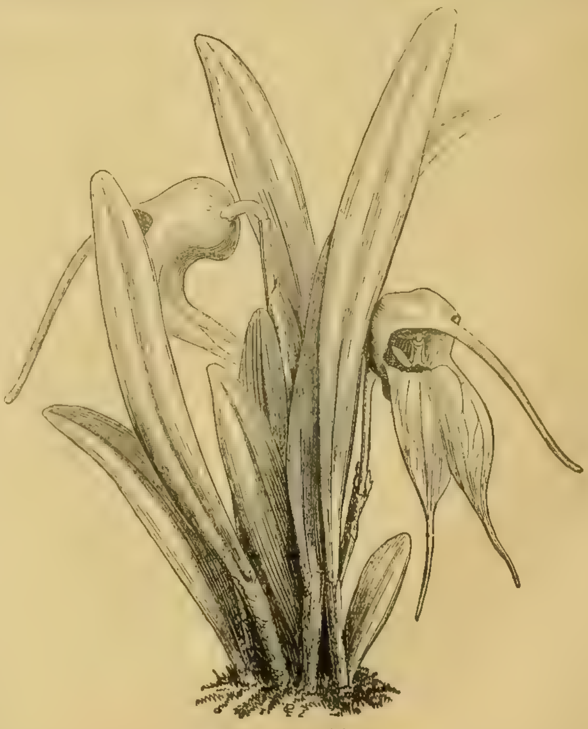
NEW OR RARE PLANTS.

Abutilon igneum.—A very distinct and beautiful Abutilon, bearing the name A. igneum, was sent to the last meeting at South Kensington, by Mr. Barron, of the Society's gardens at Chiswick. It has a large bell-shaped flower of a rich red colour, veined with velvety maroon markings. Its blooms and buds are borne profusely, and stand out free from the foliage, a quality in which the other species are rather deficient.



Abutilon igneum.

Masdevallia velifera.—The number of species now known of the genus Masdevallia is so great, and the variety of form and coloration they exhibit so diversified, that it is difficult to make a smal selection. Fortunately, they require little space to develop their fu



Masdevallia velifera.

beauty. Only one species was known to the authors of the genus, and Lindley describes only three in his "Genera and Species." In 1861 Reichenbach described thirty-six, but since then fifty additional species, probably, have been discovered, a large proportion of which are in cultivation. The present species is allied to M. Mastodon, and was originally described in the "Gardeners' Chronicle," n.s., ii., p. 98, by Dr. Reichenbach. It was discovered by Mr. Patin in New Granada, who sent it to Mr. Williams, of Holloway. Our figure was drawn from a specimen in Mr. W. Bull's nursery at Chelsea. The flowers are green outside at the base, shading into brown upwards, and yellow on the borders and tails, brown inside; petals light green; lip dark brownish-purple; whole flower shining as if varnished. —W. B. HEMSLEY.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

NOVEMBER 19.

ON this occasion some good collections of vegetables were shown in competition for the prizes offered by Messrs. Carter & Co., Sutton & Sons, and Hooper & Co. As regards plants, the chief feature was Mr. Wills' display of new fine-leaved Dracænas, which were remarkable examples of good culture, and among them were kinds the beauty of which has been hitherto unknown among Dracænas. These were effectively backed up by well grown, healthy Palms, and edged with neat little plants of Adiantum Farleyense. Chrysanthemums from the leading growers, together with a bank of new and rare plants from Mr. Bull, made up a very attractive and interesting show considering the season of the year.

First-class Certificates were awarded as follows :—

Calanthe Sedeni (Veitch & Sons).—A hybrid, the result of a cross between C. vestita and C. Veitchi. Its flowers, which are borne in long, graceful racemes, are of a vivid rose-magenta, rendering it one of the most attractive Calanthes in cultivation.

Odontoglossum madrense (W. Bull).—A kind with sweet-scented flowers, having white petals, dark at the base, with a golden-yellow throat.

Cyclamen Mont Blanc (H. B. Smith).—A robust-growing kind with very large, pure white blossoms. One of the finest white Cyclamens yet exhibited.

Chrysanthemum M. Crousse (Jackson & Son).—A Japanese kind with curiously-formed, globular flowers of a crimson-bronze colour.

Golden Ilex scotica (A. Waterer). — A smooth, golden-leaved, very handsome kind.

Odontoglossum Alexandræ var. Perrini (Jaques).—A fine variety with violet-edged petals, the backs of the flowers being also purplish-violet.

Miscellaneous Plants.—Messrs. Veitch & Sons again showed an extensive and varied collection of miniature shrubs desirable for winter use in the flower garden. These were shown in round baskets filled with Cocoa-nut fibre. Among them were noticeable Bamboos, finely-coloured Mahonias, Skimmia oblata, S. japonica, S. fragrans, Aucubas (literally covered with berries), Menziesia (purple and white), Retinospora plumosa aurea, variegated Aucubas, Yuccas, finely-berried Pernettyas, Eurya latifolia, Cornus Mas (finely coloured), Ericas in flower, Andromeda floribunda, Hollies, and other attractive hardy plants, all arranged in a most effective manner. Mr. W. Bull, Chelsea, sent an unique group of choice Orchids and other plants, which attracted much attention. The background consisted of graceful Cycads, the handsome arch-leaved Curculigo recurvata variegata, Ferns, &c., and in front of these were well-flowered examples of Dendrobium bigibbum, Oncidium macranthum, the Violet-scented O. tigrinum, the chocolate-flowered O. crispum, and the gold-laced O. Forbesi. With these were effectively associated the blue Vanda cœrulea, Lady's-slippers, Odontoglossum Alexandræ, O. crispum, Lilium neilgherrense, Calanthes, trumpet-leaved Sarracenias, and scarlet and white-spathed Anthuriums, also bushy little plants of Sonerilas. In Mr. Wills' group of Dracænas the most attractive kinds were D. Willsi, D. Bausei, D. Mrs. Wills, a fine dwarf green and white-leaved kind; D. terminalis alba, the counterpart of the well-known terminalis, only that its leaves are white and green. With these were also D. aurantiaca, a striking kind, as were likewise D. Cantrelli and D. Caustoni; D. Goldieana was also well represented in this group. Messrs. Veitch & Sons showed a fine Lady's-slipper, named Cypripedium Lawrenceanum, from Borneo. It somewhat resembles C. barbatum, but is in every way superior to it, its leaves being large and handsomely spotted, whilst its flowers are large and beautifully striped.

Messrs. Veitch also contributed an extensive and finely-grown collection of Chrysanthemums, among which were a goodly number of Japanese kinds with large, handsome, and variously-coloured blossoms. All the best new and old kinds were also represented in other sections. For these a silver Banksian medal was awarded. Mr Chas. Turner, Slough, likewise contributed a fine collection of Chrysanthemums, among which were some handsome standards, as well as plants grown in the ordinary way. To these a small gold Banksian medal was awarded. Mr. Cannell, Swanley, sent cut blooms of zonal Pelargoniums placed on a carpet of Selaginella denticulata. Among the most attractive kinds were Louisa, rose; Mr. H. M. Pollett, white, with salmon eye; Œnone, bright scarlet; M. Thompson, magenta; Lady Sheffield, deep rose. The same exhibitor also sent pot plants of the white and salmon Vesuvius Pelargoniums to show their value in winter. The plants were very dwarf, bushy, and full of bloom. Mr. Gilbert, of Burghley, sent handsome cut blooms of double Primulas the names of which were Mrs. A. F. Barron, Marchioness of Exeter Princess, White Lady, and a deep, rose coloured kind named Lord Beaconsfield. Sir C. W. Strickland showed a flowering plant of Coburgia trichroma, to which a cultural commendation was awarded. From the Society's Gardens at Chiswick came a basket of plants of Begonia Moonlight, loaded with large, graceful trusses of white blossoms, showing that when seen in masses this Begonia makes a charming effect at this dull season of the year. From the same source also came a collection of cut blooms of sixteen varieties of Bouvardias, a pink zonal Pelargonium called La France, and the nut-leaved Abutilon igneum. Messrs. Hooper & Co. sent groups of finely-flowered plants of Begonia Frœbeli, raised from seed last spring. The plants were in 5-in. pots, had been growing out-of-doors all summer, were lifted in autumn, and to all appearance a good display of flower for several months to come will be the result. Associated with these in striking contrast was a collection of well-grown Cyclamen, the flowers of which varied from the purest white to the darkest crimson-purple and rose. The same exhibitors also contributed a collection of cut blooms of Chrysanthemums, the whole being backed up by well-grown Palms, &c. Mr. H. B. Smith, of Ealing Dean Nursery, sent a group of finely-grown Cyclamens, healthy, bushy in foliage, and well-flowered, the blossoms varying in colour from pure white through all shades of purple, pink, and rose. A collection of cut blooms of Chrysanthemums was shown by Mr. Turner, of Slough, which, on account of their large size and rich colours, was universally admired. A good collection also came from Messrs. Jackson & Sons, in which were several new kinds worthy of notice.

Fruit and Vegetables.—Vegetables were shown in large quantities. In competition for prizes offered by Messrs. Carter & Co., High Holborn, for ten varieties of vegetables. thirteen collections were exhibited. These exhibits were generally good. Veitch's Autumn Giant Cauliflowers, Cabbages, Onions, Potatoes, and Celery especially were noteworthy, Carrots and Parsnips being, as a rule, worm-eaten or rough in appearance. We noted that one exhibitor had apparently greased or oiled his Carrots, which gave them anything but a good appearance, indicating that "dressing" is even practised in vegetable-showing as well as in that of florists' flowers. The first prize was won by Mr. Pragnell, Sherborne Castle, Dorset, who had an even and well-grown collection, containing remarkable heads of Williams' Matchless Celery, clean and handsome, finely-shaped Carrots and Parsnips, well-ripened white Spanish Onions, shapely Beetroot, Turnips, and Potatoes. Mr. Miles, Wycombe Abbey, was a good second, but his Parsnips were rather overgrown, and the Cabbages too white; Onions, Turnips, Beet, Cauliflowers, and Potatoes were excellent. The third prize fell to Mr. Neal, gardener to J. Southby, Esq., Bampton, Oxon; and the fourth to Mr. Baker, Bampton.

In competition for the prizes offered by Messrs. Sutton & Sons, Reading, for twelve varieties of vegetables, there were six collections exhibited. The best in this case also came from Mr. Pragnell, and consisted of a similar collection to that already recorded, with the addition of a handsome brace of Tender and True Cucumbers and a fine dish of Brussels Sprouts. The second prize was won by Mr. Neal, Bampton, and the third by Mr. Iggulden, gardener to R. Baker, Esq., Orsett Hall, Romford. For prizes offered by Messrs. Sutton & Sons for a dish of their Improved Reading Onion there was brisk competition, the first prize falling to Mr. Neal, Bampton. Sutton's Magnum Bonum Potato was well represented, and there were also Potatoes shown in competition for the prizes offered by Messrs. Hooper & Co.

Mr. S. Ford, gardener to W. G. Hubbard, Esq, Leonard's Lee, Horsham, contributed a splendid collection of Apples, consisting of upwards of thirty dishes. These fruits throughout were even in shapeand finely coloured. The most attractive kinds were Devonshire Queen, Golden Reinette, Cox's Orange Pippin, Cherry Orchard, Cellini, Duck's-bill, Blenheim Orange, Poor Man's Profit, Court Pendu Plat, and Wellington. The same exhibitor also sent three good bunches of Lady Downes Grape.

Grapes were contributed by several well-known growers. Mr. J. Atkins, gardener to Colonel Loyd-Lindsay, Wantage, contributed six fine bunches of Muscat of Alexandria, well finished as regards colour and bloom, and the berries were even and very large. Mr. Howe, The Gardens, Benham Park, Newbury, showed good examples of Black Alicante; and Mr. Wood, gardener to Lady Mostyn, Leybourne Grange, Kent, contributed good bunches of Gros Colman. Mr. Harrison Weir exhibited fairly good dishes of Champion Muscat grown in a ground Vinery. Mr. Gilbert sent a Netted Victory of Bath Melon, good in appearance and excellent in flavour. The same exhibitor also showed a brace of Montrose Seedling Cucumber, a small and handsome variety, very green, and specially adapted for winter use. Mr Gilbert also contributed a handsome bunch of Trebbiano Grape finely ripened. Mr. Ross, of Newbury, sent nine well-grown fruit of smooth Cayenne Pines, and good examples also came from other growers

The Chrysanthemum Show at the Aquarium.—This was an excellent show, both as regards plants and cut blooms. Messrs. Henderson & Son exhibited a large collection of finely-grown plants, among which were several new kinds. Messrs. Dixon & Co., of the Amhurst Nursery, Hackney, also contributed many well-grown plants and a stand of dried Grasses. The best plants in the exhibition, came from Mr. Hall, Tulse Hill; they were very dwarf and well furnished with evenly-developed flowers and healthy leaves. Several good standard plants were shown which were effective, but pyramids were formal and stiff. A box of blooms of Pelargoniums was sent by Mr. Cannell from his nursery at Swanley. Cut blooms of Chrysanthemums were well shown by Messrs. Saltmarsh & Sons, Cheltenham, and other good growers. Messrs. Hooper furnished a fine stand of dyed natural Grasses and flowers, which attracted much attention.

ANSWERS TO CORRESPONDENTS.

How to Heat a Small Greenhouse.—I have a small greenhouse 16 ft. by 5 ft., and am desirous of knowing how best to heat it during winter. I have tried one of Deard's stoves, which answered very well, but it required a great deal of attention, and generally went out at night when it was most wanted. I have the water pipes passing through the house, but want a way of heating the water economically, and with as little trouble as possible. Perhaps some of your readers will kindly enlighten me on the subject.—A Welsh Lady. [The best manner of warming a greenhouse as above is by means of a hot-water apparatus with gas boiler attached, or, if gas be unobtainable, by a boiler that will burn ordinary fuel.—Geo. Deal.]

Cutting Down a Large Screw Pine.—Dewsbury (p. 454) will find that his large Screw Pine, if cut down, will grow again. It may be cut down at any time, and it is best to leave a few inches of stem.—James McNab, *Royal Botanic Garden, Edinburgh.*

—— "Dewsbury" will do well to get his joiner to make and fit a neat wooden box on the top of the pot in which his Screw Pine is growing; then fill up with soil suited for the Pandanus. In a few months, without risk of loss, he may cut the bottom pot away.—York.

—— "Dewsbury" will find that the best way to manage his Pandanus utilis, in order to induce it to break again, is to thrust a sharp-pointed stick into its heart and give it a twist, so as to destroy that portion of the plant and prevent its further growth in that direction, when it will at once set to work to form suckers, any or all of which may, after a short time, be taken off and struck, or the strongest and best situated be left, and the head cut away. The advantage of treating it in this way is twofold, as the beauty of the plant may be enjoyed just the same; and if cut down so as to entail the loss of the leaves, there would be great risk of losing it, as the chances are, owing to the loss of sap from bleeding, that it would never break again. In taking the suckers off, they should be pulled away with a heel, and have the rougher part of this trimmed off before inserting them in sandy soil, and putting them where they can get a good, brisk bottom-heat.—S. D.

Pruning Magnolia grandiflora.—Is it injurious to Magnolia grandiflora, growing against a wall, to cut any of its shoots back?—P. [No; a moderate pruning does no harm. Of course cutting off large branches will do more or less injury to any tree subjected to it, inasmuch as that cannot be done without inflicting a severe check on it. The pruning should be done in spring about the time when active growth begins.—E. H.]

Ferns for Planting in an Unheated Conservatory.—Mr. S. Champ (p. 454) will find the following kinds suitable for this purpose, viz., Polystichum vestitum venustum, Woodwardia radicans, Adiantum venustum, A. pedatum, Lomaria gibba, Asplenium bulbiferum, Dicksonia antarctica, Pellæa rotundifolia, Cyathea dealbata, Todea pellucida, Cyrtomium caryotideum, Athyrium Goringianum pictum.—J.

—— Many greenhouse Ferns, I have no doubt, might be successfully cultivated in a house without artificial heat, especially if the house be large in size and the plants not near the glass. The following list may be found to answer your correspondent's requirements. Many of them have been found hardy in some parts of England: Dicksonia antarctica, Woodwardia radicans, W. orientalis, Woodsia polystichoides, Lastrea Standishi, Lomaria magellanica, Pteris longifolia, P. tremula, P. serrulata, Cyrtomium falcatum, C. Fortunei, Adiantum pedatum, Asplenium bulbiferum, Hypolepis repens, Nephrodium molle, N. m. corymbiferum, and Onychium lucidum. In all cases good, strong plants should be obtained, or they should be kept in pots till well rooted and strong. A good many species about whose hardiness there may be some doubt might be wintered in such a house if covers of brown paper could be placed over them on cold nights whilst sharp weather lasted. With such care a good many greenhouse Ferns might, I think, be grown in an unheated conservatory.—E. Hobday.

—— Mr. S. Champ (p. 454) may grow a great variety of Ferns in his cool house if it be well glazed with thick glass, and the sides of Fern houses may be well clothed with Ferns. In this way we have planted out on elevated blocks of stone gigantic Woodwardias that over-shadow the dwarfer ones, that is such kinds as succeed best in deep shade. The following are all beautiful varieties, viz., Pteris umbrosa, P. serrulata, P. critica albo lineata, Lomaria chilensis, Lastrea elegans, L. decomposita, L. Sieboldi, and L. Standishi, Balantium Culcita, Platycerium alcicorne, Adiantum cuneatum, and Cheilanthes elegans.—J. Groom.

Alnwick Seedling Grape.—Is Mr. Hunter's Grape (p. 408) from the stock or kind sent out by Mr. Ingram, and distributed by Mr. B. S. Williams? or that grown by Mr. Bell, of Clive House, Alnwick? or are the two identical?—J. Peed. [Allow me to say, in reply to Mr. Peed's inquiry, that I got the Vine of Alnwick Seedling grown by me from Mr. Bell, Clive House, Alnwick. A bunch of Grapes being forwarded for my inspection before sending it to the Fruit Committee contained an eye, and I made use of it. I am not in a position to say if that sent out by Mr. B. S. Williams is identical or not, not having seen the produce of his stock.—J. Hunter, *Lambton Castle.*]

Fruit Culture (*Khoda Bux*).—You ought to have kept off the frosts in spring from your fruit trees on walls, and it is even possible to do so on espaliers; also to have selected only hardy kinds that ripen well in your summers. You say nothing of the nature of the soil, as Quince and Paradise stocks are not good on all. You can expect no kind of success so long as your trees are devoured by American blight, which is equally injurious under all systems. As to your English trees, you probably cut and pinch too much. Allow the young trees to attain something like a natural fair development before pinching them much. The tying down does not injure the tree, but if the cordons are not well managed they are very unsatisfactory. We think, with you, that the little utensils for training should be sold as cheaply here as in Paris, but with trade matters of this kind we can scarcely meddle. When next about Paris you should see a few established fruit gardens, which give a better idea than those at the exhibition of what you desire.—V.

East Lothian Stocks.—Referring to Mr. Gilbert's note (p. 454), I may say that I have had these Stocks good from both spring and autumn sowings. The former were sown in heat in March, pricked off when large enough to handle and given every attention, with the view of securing good strong plants for turning out early in May. If treated as biennials, the seed should be sown in the open air thinly early in August, be pricked into boxes, or, better still, be potted singly in small pots, and wintered in a frame or pit. If shifted into 4½-in. pots early in March, and planted out finally in April, allowing them plenty of space, a very fine and continuous bloom may be expected. I had the best bloom last year which I ever remember to have had; the plants, indeed, flowered continuously all through the winter and spring, and so gay and sweet were they that I was sorry when compelled to pull them up to make room for other plants. Occasionally the plants die in winter, especially if they have been crowded together and the weather happens to be wet and cold. Frost, if the weather be dry, does not seem to hurt them so much. If it is desired to have a continuous bloom they should be planted on a well-drained site, a little raised above the ordinary level, if possible.—E. Hobday.

—— Sow under a hand-glass or in a cold frame early in March. When fit to handle, prick off the young seedlings into light, rich soil in a cold frame, and when 3 in. or 4 in. high—say, about May 1—plant them out. Sometimes they stand the winter in Scotland, and bloom splendidly early next season; but the best way to save seed is to pot up the single kinds in September, winter them in a cold pit, and plant them out in spring after severe frosts are past. In cold localities they require to be sown in heat in February, in order to get them to bloom well the same season. For flowering early in pots, sow in the open ground about the 12th of August, and pot them when they are 2 in. or 3 in. high. They form very fine decorative plants in pots early in spring. We have often lifted large plants of them in September for making specimens to bloom the following spring, and they are well worth the labour and attention.—D. Thomson, *Drumlanrig.*

Scale on Epacrises.—In answer to "W. M. S." (p. 454), allow me to state that we have found nothing to equal Abyssinian Mixture in which to dip plants infested with thrips or scale, taking care to keep it from the roots; it will not injure the foliage.—W. H. G.

—— Paraffin, mixed at the rate of a small wineglassful to four gallons of water, will kill scale and does not appear to harm the most tender foliage. Your correspondent will therefore be quite safe in using it at least of that strength on his Epacris, and if he does so in hot, soft water, he will find it will mix better and be more effectual than if applied cold. With such hard-leaved plants as Epacrises are the heat of the water may be as great as the hand will fairly bear, as in passing through the syringe and air, in applying it, cools down considerably, and the hotter it is, so as not to endanger the safety of the plants on which it is used, the more satisfactory will its effect be, and the same may be said of all the insecticides. In using paraffin for the purpose of destroying scale, &c., the water should be kept constantly agitated either by rapid stirring or, better still, by some one taking up a syringeful and returning it again with force into the vessel, so as to drive any paraffin that may, from its greasy nature, be floating on the top into the water, and while this is being done a second person can be putting it on with another syringe. If not managed in this way its distribution is likely to be very irregular, from the cause already specified, and therefore some part of the plants would get more than their share and of greater strength than would be safe for them. Fowler's Insecticide, Abyssinian Mixture, Gishurst, or any of the mixtures of similar character that are now sold will, if used in hot water at the rate of 4 oz. per gallon of soft water, destroy scale, but the plants should, when applying it, be laid on their sides and left in that position to drain for a time, in order that none may get into the soil.—S. D.

The Red-berried Elder.—Does this come true from seed? and have the berries the same qualities as the black-berried or common variety? I should be glad if Miss Hope or some other correspondent would kindly forward me some seeds. That lady's pithy description of the bushes looking like Pyrus japonica in full flower makes one long to raise and plant the red-berried Elder in quantity. I have not found sheep nor rabbits troublesome to the common Elder. The immunity or otherwise, however, of this or other shrubs from their ravages often depends on the scarcity or abundance of food, or other plants that they may prefer to those that escape, in any given locality. Hence the difficulty of being assured at times that any particular plant is safe against the nibblings of sheep or the ravages of rabbits.—D. T. Fish.

Arbutuses from Seed.—Can these be raised from the berries now ripe? if so, what time ought they to be sown?—A Regular Subscriber. [When the berries are gathered, the seeds should be separated by washing and carefully dried. March is certainly the best time for sowing, which should be done either in pans or frames.—W.]

Lamp Heating.—I am surprised that only one answer has been given to the inquiry (p. 275) as to the adaptability of a lamp for heating, or rather for excluding frost from, a small greenhouse; and, as I used one for years, possibly a short account of my experience may not be out of place. My greenhouse, 10 ft. by 7 ft., had the worst of aspects, viz., facing due north, and had no sunlight from November to March, but, with the help of a duplex paraffin lamp stove, which can be bought for about £1, I managed to exclude frost during some sharp winters. The principle of the stove is the same as that of a duplex lamp, the difference being that metal is used both for chimney and casing; the reservoir holds two quarts of paraffin oil, and will burn (if needed) for thirty hours, though it should be trimmed after every twelve hours, if possible. The chief points to be attended to are: Never to relight the burners without cutting the wicks, to keep the reservoir full, and to be sure not to let the lamp stand in a draught, or a day's amusement may be found in washing the leaves of the plants. If properly trimmed and kept clean, there is no smell from the oil, and the plants do not suffer in the least from the fumes. There is a reservoir for water, which evaporates as the lamp burns, but this I hardly ever use, as a dry heat is wanted to exclude damp, which does more harm to Pelargoniums than cold.—R. G. V., *Shepherd's Bush.*

Names of Plants.—*J. T. Hardwicke.*—1, Polypodium glaucum; 2, Lastrea tenericaule; 3, Pteris incisa; 4, Blechnum occidentale.

Questions.

Morello Cherries.—I have two Morello Cherry trees trained against the back of my house having a direct north aspect, as recommended in The Garden, September 7 (p. 222), and three with an eastern aspect, but shaded by the house. For the last fourteen years they have bloomed and fruited well, but, just when beginning to ripen, nearly all the fruit withers and drops off, so that in no one year have we had two quarts of ripe fruit off the five trees, which have attained a considerable size. It is a clay soil. Can any of your readers suggest a reason for the failure?—G. Atkin.

Weeds.—Can any of your readers tell me the best way of getting rid of weeds in a large herbaceous garden many years neglected? There are beds of shrubs and old plants, also a great many bulbs and bulbous roots which were only planted last spring.—R. D., *Dolgelly.*

Jerusalem Artichokes and Rabbits.—Can any of your correspondents inform me if rabbits will meddle with Jerusalem Artichokes if planted in a wood where they abound? I have a piece of ground here on which Potatoes have been grown so many years in succession, that they now scarcely reproduce their own seed, and I thought of planting it with Artichokes, if they will be safe from rabbits.—W. V., *Boro'bridge.*

Icehouses.—Which is the best form for the bottom of an icehouse? The one here has a flat boarded bottom, with holes formed in the centre, and a space of ½ in. around the outside between the walls and the boards. Would it not be better if the boards sloped from the wall to the centre, with a grating placed there to carry off the water? I might mention, perhaps, that there is a drain in the centre underneath the boards, and that the latter are fixed like those of an ordinary floor; therefore, the space underneath is quite hollow.—W. V., *Boro'bridge.*

Hybridising and Propagating Clematises.—Being fond of Clematises, I have now some seventy varieties of them under cultivation in my garden, and I am anxious to obtain some new combinations by hybridising. Will any of your correspondents who have done so much already through your columns to spread a love for the Clematis amongst amateurs be so kind as to give me some practical hints about the matter, as well as about the best mode of propagating Clematises?—Wm. Krahnstover, *Baden-Baden.*

Salvias in Small Pots.—Most of us are acquainted with the usefulness of the good old Salvia splendens for autumn blooming, and with gesneræflora for spring decoration in the form of large plants. But let me just say a word in favour of S. splendens in small pots. Take off some good strong cuttings the first week in July, put three round the side of a 5-in. pot, and put them into a moist pit, such as a Cucumber pit. When struck, pinch out the tops, and after they break shift them into 6-in. or 8½-in. pots, giving them a place in a cold pit or greenhouse, where they will soon make good plants. When they begin to bloom give them some encouragement, putting them into a warm house as the days get cold, and the grower will be rewarded with some excellent small plants for conservatory or indoor decoration. Let me just say that S. miniata splendens and splendens alba are both good Salvias, and worth everyone's growing. They are much dwarfer and bloom earlier.—J. C. F.

NOTES FROM KEW.

Hardy Shrubs.—Though not in flower at the present time, three North American shrubs amply deserve notice on account of the beauty of their decaying foliage. The Blue Tangle or Dangleberry (Gaylussacia frondosa) is especially attractive, its slender branches being well clothed with bright crimson-scarlet foliage; in summer the leaves are green above and glaucous beneath; the sweet and edible fruits are dark blue with a white bloom. The dwarf Huckleberry (Gaylussacia dumosa) has summer leafage green on both surfaces; at present its leaves are also finely coloured, the scarlet being considerably toned down by an admixture of bronze; the fruits of the latter are black, whilst the blossoms of both are white, tinged with red. Leucothoe coriacea is another neat-growing Heathwort, with leaves now bright red. The foregoing have been very conspicuous for several weeks past, and still retain their leaves. All would come in useful for making gorgeous masses of autumnal colour quite close to the ground.

Greenhouse Plants.—Daphne papyracea, with its bright green, lance-shaped leaves, and with the tips of its twigs burdened with clusters of long-tubed, pure white blossoms, is a neat-habited and free-flowering plant; it is a native of India, where a paper is manufactured from its bark, which, on account of its great durability and immunity from damp, is much used in some parts for deeds and records. Moræa edulis is a charming South African Irid, with Rush-like leaves and flower stem, 1½ ft. to 2 ft. high, bearing beautiful pale blue blossoms, each of the three sepals having a yellow blotch in its centre.

Stove Plants.—Stephanophysum Baikiei, a highly interesting and beautiful Acanthad, first flowered in this country just twenty years ago. It was raised from seeds taken from a dried specimen collected during Baikie's Niger Expedition by Barter, the botanist, who accompanied the expedition, and who fell a victim to the deadly climate in July of the following year. The plant is of pretty good habit, and its fine, curved, tubular, scarlet blossoms are freely produced in large terminal panicles. Thunbergia Harrisi, a native of Moulmein where, in some parts it forms the brightest ornament of the jungle, makes a handsome stove climber, easily kept within due bounds. The blossoms are borne abundantly, even by young plants. In colour, the limb of the corolla is a bright purplish-blue above, very pale beneath, fading from yellow into white at the throat.—†

Hydrangeas in Pots.—These are most useful plants, especially for all concerned with the plant decoration of rooms. They are not half so much grown in private gardens as they deserve to be, this being in part owing to an impression that they are difficult to flower freely, some thinking that it is necessary to have large plants to secure an abundant bloom. This is not so, however. If properly grown no plant is more certain to bloom freely, and in any sized pot, from a 4½-in. upwards. The grower may easily secure good plants in bloom every week in the year, so every one may suit himself with the size of plants and their time of blooming. Here we have not been without good plants during the last twelve months, and at the present time (Nov. 20) we have some handsome plants in 5-in. pots with heads of bloom 8 in. in diameter, while the plants themselves are not more than 1 ft. high. Few plants will stand such an amount of ill treatment as these flowering Hydrangeas, which will even live in dark places for a long time, and even withstand the influence of gas. Their usefulness in this way is shown by the numbers that are grown for Covent Garden. Those who have to furnish London rooms with plants know best what is useful in this way. When some flowers are pink and some blue the effect is of course the more valuable. With your permission I will at some future time state my way of cultivating these plants.—J. C. F.

Burnt Clay.—Since this is a material of great value in the amelioration of heavy clay soils, a brief explanation how the operation of burning is carried out may be useful to the inexperienced. About London the work is done at any convenient season, but preferably in autumn and in dry weather. The soil is dug out to a depth of 6 in. or 8 in., then a thick layer of brushwood is placed on the ground, and over that a layer of fine breeze or coal; this is followed by a layer of clay, then more breeze, followed by more clay, and so on, until a heap or ridge is formed. The brushwood is then ignited, and this fires the breeze or coal, and the whole heap gradually becomes a burning smouldering mass. Care must be taken that the fire does not burn through at any point. The cost in the neighbourhood of London is about 3s. a yard.—"Florist."

NOTES OF THE WEEK.

Vanillas at Syon House.—These bear, if possible, heavier crops at Sion House this year than we ever remember to have seen them. Some of the bunches number as many as fifteen pods, each of which measure nearly 9 in. in length. The plants now in fruit are growing in a narrow border filled with crocks and brick rubbish, on which are placed a few inches thick of peat, and under which run hot-water pipes, from which a little bottom-heat is obtained. Several more Vanillas have also lately been planted in a shallow box set on a shelf on the back wall of one of the houses, the plants being trained along the wall and on a slanting piece of woodwork forming part of the roof. In this position they have grown amazingly, and they will no doubt bear good crops of fruit. Moisture, warmth, and sunshine appear to be important points to be observed in the culture of the Vanilla, but the most important of all is the perfect fertilisation of the flowers when they open.

Hydrangeas in the South of Ireland.—It is really astonishing to see the Hydrangeas hereabouts. I was curious to count the number of flower trusses on one plant, and found them to be 385. I also measured one or two of the largest trusses, and found them to be not less than 15 in. in diameter. This was a blue-flowered plant, and its circumference was 74 ft. It is not by any means uncommon to meet with Hydrangeas hereabouts much larger than the one here alluded to. A friend told me a few days since he had counted not less than 950 trusses upon one plant.—JOSIAH JEFFREY, *Derry, Ross Carberry, Co. Cork.*

An Alpine Garden under Glass—Mr. Joad, of Wimbledon, has lately had a rockery constructed under glass by Mr. Pulham, of Broxbourne, on which are planted many of the rarer and more beautiful of Alpine plants. The house is a span-roofed one, and the stones are built up in such a way in the middle as to give it a natural cave-like appearance. All round the house, too, stones are placed, in which are left deep pockets filled with soil, in which the plants are growing. The plants have, as yet, made but little progress, but when fairly established this will prove a very interesting house. The plants can readily be watered by means of a perforated pipe fixed along the middle of the house close under the roof, and to which a tap is fixed, so that the plants may be subjected to a fine spray of water whenever that may be desirable. In the same garden are also houses planted with half-hardy plants, and herbaceous plants are likewise grown to some extent out-of-doors. Altogether, this garden is a most interesting one.

Pine-apples in Covent Garden.—The culture of Pine-apples at St. Michaels for the English market appears to be on the increase, judging by the quantities of fruit now to be found in Covent Garden; their quality also seems to be improving yearly. At the present time really handsome, well-coloured Pines, weighing from 5 lb. to 8 lb., may be bought at prices varying from 10s. to 15s. each. This must in time put a stop to Pine growing in England, as far as autumn and winter fruits are concerned, but during what is termed the London season, a time when all kinds of fruits are in most demand, foreign Pines are scarcely obtainable, and good English Queens fetch more money per lb. than it takes to buy a whole fruit of the Smooth-leaved Cayenne at this season of the year.

Dipladenia boliviensis in Winter.—This is one of the best stove climbers which can be grown for supplying cut blooms during the autumn, winter, and spring months. We lately saw plants of it in the gardens at Syon House flowering freely, the blooms being very white, with a rich golden-yellow throat. The plants were trained on single wires placed across the house at good distances apart, a method by which comparatively little light is kept from the other occupants below, whilst a good effect is the result, and a supply of cut flowers of the choicest description is obtained when they are in most request and most valuable.

Orchid Houses in Winter.—At the present time the Orchid houses in Messrs. Veitch's nursery, Chelsea, are as attractive as at any other season of the year; and, this being a comparatively flowerless time with other plants, Orchids are now doubly valuable. A fine specimen of Cattleya exoniensis bears from eighteen to twenty gorgeous blossoms, and associated with it are also C. Dowiana, C. labiata, and C. elegans, all finely in bloom. In one corner of an Orchid house an effective display is made by means of Calanthe Veitchi and C. vestita, intermixed with Oncidium varicosum and O. Forbesi. Amongst these are also suspended finely-flowered plants of the beautiful Dendrobium formosum giganteum. Quite a floral avenue is likewise formed in one of the houses by Calanthes, the showy blue Vanda cœrulea and V. suavis, Odontoglossum Roezli (growing in small pans suspended from the roof, the flowers of which are very large and finely coloured), and various Dendrobiums. The charming Burlingtonia fragrans, growing on long blocks of wood, is bearing a rich profusion of graceful racemes of ivory-white, sweet-scented blossoms. In a long corridor, occupied on each side with fine-leaved Dracænas, Palms, Begonias, Crotons, &c., yellow-flowered Oncidiums in pots, and Dendrobium formosum giganteum on blocks suspended among the graceful leaves of the Palms, &c., have a charming effect at this season of the year.

Asparagus decumbens.—This makes an elegant basket plant in winter. Its foliage is light and feathery; it assumes a pendent habit, and, being of an intense green colour, when well grown it is effective either in the conservatory or dwelling house. We lately saw plants of it grown in pots in one of the houses in Mr. Ware's nursery, Tottenham, on a shelf, to which they formed a green and elegant curtain.

Passiflora quadrangularis in Fruit.—In addition to the fine effect which this climber produces when in flower during summer, it is by no means unattractive in winter when in fruit. Only as many fruit as the plant will conveniently carry without sustaining injury should be left; these will attain the size of a swan's egg, and when they assume a transparent cinnamon colour they are very handsome. We lately saw a plant of this Passion-flower in fruit at Syon House.

Bouvardias at St. John's Wood.—There is just now a good display of Bouvardias in the Pine-apple Nursery. The plants, which consist of the best cultivated kinds, are arranged on stair-like stages in a large span-roofed house, where some hundreds of them, with flowers of various colours, have a good effect. They are the produce of cuttings struck in spring, planted out-of-doors in light, rich soil, kept well supplied with water, mulched during summer, lifted in September, potted, and, after being set in a cold frame shaded from bright sunshine for a week or two, placed in the house which they now occupy. All Bouvardias may be successfully grown in this way, a plan which produces far larger and more healthy, free-blooming plants than pot culture. Plants cut back after flowering, and planted out in spring, might be grown into large specimens, which in the conservatory, at this season of the year, would be most desirable. If, after being potted, the plants are kept in a healthy, growing condition, and the flowers cut as they open, a good succession of bloom may be obtained all through the winter months.

Epiphyllums on Pillars.—These look well clothing pillars or supports in the conservatory or warm greenhouse. They are easily brought into the required form for this purpose, and they may either be grown in pots or be planted out, but the former way is the best, inasmuch as the plant can be removed when out of flower and replaced by something else. We lately saw some plants similarly situated in flower in a garden near London.

Luculia gratissima.—This beautiful plant is, it is satisfactory to find, being brought into more extensive cultivation than has hitherto been the case. For some years past it has been a scarce plant, even in the best nurseries, but it is not at all difficult to find at the present time an abundance of thrifty young plants of it in most of the London nursery gardens.

Asplenium nobile.—This is a graceful Fern, with light, lace-like pinnæ and arched fronds, which somewhat resemble those of A. viviparum or A. lineatum. It is well adapted for growing in small pots for the decoration of vases in the greenhouse.

Bignonia venusta.—This old-fashioned but still excellent plant is now finely in flower at Syon. It is trained over the rafters of a half-span-roofed house, from which long festoons of its brilliant orange blossoms gracefully depend. Such a charming plant, flowering abundantly at this season of the year, might be more frequently met with under the same conditions than it is, for few climbing plants are more worthy of a place in the conservatory, however small that structure may be.

Prize Vegetables.—The extensive collections of vegetables shown at South Kensington on Tuesday last are such as are likely to have a good effect. It has too often and too long been a defect of London shows that kitchen garden products were not illustrated thereat. Mr. Pragnell, of Sherborne Castle, Dorset, who has for the past year written the "Diary" in the pages of THE GARDEN, won the first prize in the two great classes. The many important prizes he has won during the last seven years, where the competition was of the keenest, leave no room to doubt that he is the best of vegetable growers.

The Victoria Regia in the Regent's Park is now very fine. It has thrown up this year thirty-nine blooms, and some are yet to come, the plant being as yet as fresh as at any time during the season.

No. 367.] SATURDAY, NOVEMBER 30, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> The Art itself is Nature."—*Shakespeare.*

THE INDOOR GARDEN.

PLANT ARRANGEMENT IN GREENHOUSES.

This is a matter about which it is difficult to write. The subject cannot be comprehensively treated upon paper, but anyone who has visited many small gardens at different seasons of the year must be aware that the quality of the plants and the way in which they are often arranged in greenhouses leave much to be desired. Large and handsome greenhouses are frequently built contiguous to villa residences. The gardens in the neighbourhood of large towns are necessarily small, and do not admit of much space being devoted to pits and frames in which to cultivate plants, and without such adjuncts there is much difficulty in keeping the house gay with flowering plants. In the construction of such houses, the architectural effect is studied at the expense of those conditions that would conduce to good culture. The best houses are those with span roofs, and of such a size that the plants intended to be cultivated in them should not be far removed from the glass. As a rule, the further plants are from the glass, so much the more difficult it is to keep them in a healthy condition and well furnished throughout with leaves. Houses over 16 ft. wide should have a central stage and platforms round the sides on which to place the plants. If one side of the glass structure be attached to the house, I would still have it of the span-roofed form, and the raised platform could be carried round the house all the same. This platform should be about 2 ft. 6 in. in height, the side stages to be reserved for small and medium-sized plants. A row of large specimen plants might be arranged along the centre of the middle stage.

Let us now consider what would be the best plants with which to furnish such a house and keep it gay without much extraneous aid. What are usually termed hard-wooded plants are rather difficult to keep in health when mixed up with a miscellaneous collection of rapid growing plants, such as Pelargoniums, Cinerarias, Calceolarias, &c. A most useful class of plants are the Epacrises, nearly all of which are winter-flowering, and they have the merit of lasting long in flower. A selection of the best varieties will maintain a succession of bloom from January till June; the flowers also last a long time in a cut state, and the colours are such as usually give the greatest satisfaction. The pure white E. candidissima is very beautiful, and E. hyacinthiflora carnea produces beautiful spikes of flowers. There is also a fine variety named fulgens, and E. Kinghorni is a compact-growing, free-flowering sort. These blossom early. Amongst later kinds that continue the blooming period until June may be named E. Eclipse, the flowers of which are very long, bright crimson, with a blush or white mouth. E. miniata splendens is perhaps the best of all: this variety and Eclipse are well adapted for exhibition purposes. When these plants are of small size they ought to be arranged on the side stages near the glass, and as they grow larger they should take their places in the centre.

Azaleas of the Indian and Japan sections should also be grown by the owners of small gardens. Those with decided colours are the most useful, and if only a few can be grown the pure white A. Fielderi should be amongst the Indian sorts. One of the latest in flower is Brilliant, which should also be grown. These Azaleas flower without the aid of artificial heat in May, June, and July. Standards with round heads are very useful, and form a distinct feature. Camellias cannot be dispensed with in any house if it be at all adapted for their culture. They are so hardy, and when their management is understood they require no more attention than common plants. The old Double White and the pure white variety named Fimbriata, with fringed edges to the petals, produce superb flowers. C. imbricata is an old sort with well-formed crimson blossoms. C. Reine des Beautés has flesh-coloured flowers. Countess of Derby is a beautiful white kind striped and flaked with rose. The above selection of hard-wooded plants may remain in the greenhouse during the whole year, except in the months of July, August, and September.

Roses in pots constitute an indispensable feature in the greenhouse, and for this purpose small plants in 8-in. pots may be grown; they might be protected during winter and early in spring with glass lights in a place fully exposed to the sun, and be removed to the greenhouse when the buds are well advanced. Hyacinths, Tulips (of the early flowering Dutch sorts), and Polyanthus Narcissus, potted from September till the end of November, will, with but little trouble, yield a succession of flowers. Those to bloom early should be removed to the greenhouse about the end of November, and the latest about the end of January. Mignonette in pots trained as standards or bushes, and in pots from 5 in. in diameter to 11 in. according to the taste of the owner, is always welcome, and Cinerarias in all their varied colours form a brilliant feature from Christmas until the end of April. Seedlings are the easiest to manage, and their size should be regulated by that of the house. Neat, bushy plants may be flowered in 6-in. pots, and large specimens in 8-in. ones. Calceolarias require very similar treatment; and if a frame can be spared for the one, with its back to the south, the same will answer for the other. Their desperate enemy is green fly, a pest which must not be allowed to establish itself.

The culture of stage and fancy Pelargoniums is well understood, but, nevertheless, one often sees the plants badly cultivated, the stems drawn, and the leaves spotted. No plants are easier managed, but they must be kept in a light, airy place, and free from green fly. They succeed the Cinerarias and Calceolarias, being in flower through the months of May, June, and July; the zonal section succeeds these, and, with good management, are in flower until November, when the different sections of Chrysanthemums take their place. A collection of plants, such as I have just enumerated, will keep a greenhouse gay all the year round, with the aid of a few cold frames. Liliums have not been included, but a selection of them will last in bloom for three months. Phloxes, Carnations, and Picotees will also flower during the months of July, August, and September.

As to the method of staging the plants, the large ones, as I have already said, must first be placed in the middle of the centre platform, with a row of dwarf plants along the edges. The usual and easiest way is to allow the intervening space to be filled with plants that form an almost unbroken surface, falling from the centre to the edge. If this arrangement be carried out the formality ought to be broken up by introducing tall plants here and there at intervals. Standard Azaleas answer for this, and Mignonette trained as standards also answers well; so do Phloxes, perpetual-flowering Carnations, and, in their season, neat plants in 6-in. pots of standard Chrysanthemums. In large houses the hardier Palms may be introduced with excellent effect, and in all cases flowering and fine-foliaged plants should be judiciously mixed, and a distinct class of plants should be grown on the different stages. On the front and end portions should be placed the hard-wooded Cape and New Holland plants with hair-like roots. These increase rapidly in size, and if good specimens be desired, they must not be overcrowded with other plants. If the pots be as large as 12 in. in diameter, dwarf plants, both flowering and fine-foliaged, may be arranged underneath them, but they should not be allowed to grow close to the branches of the specimens. The back stage near the residence will be much shaded by the centre stage, and more so by the wall of the house. Greenhouse Ferns and Camellias may entirely fill that portion; they will form a distinct and pleasing feature, and if more Camellias be wanted, they might be grown on the back part of the centre stage. Avoid overcrowding in all cases. Cleanliness is imperative. Let the pots be quite clean, and all decaying leaves be removed as soon as they are perceived. Fumigate the moment the least trace of thrips or green fly is observable. J. Douglas.

GARDENIAS, THEIR CULTURE AND PROPAGATION.

In most gardens of any considerable size few or more Gardenias are found. They are the sweetest of all flowers, and perhaps the most highly appreciated of any. Their odour is peculiarly rich and satisfying, combining that of the Stephanotis and the Rose. The colour of the more popular sorts is the purest white, which renders them the more valuable for bouquet and other purposes. Gardenias, however, if crushed or when about to fade change colour, but even when thus discoloured by time or accident they retain their sweetness. Considering the almost unparalleled popularity of Gardenias, it is surprising that they are not more and better grown in private gardens than they are. The Gardenia is assuredly one of those plants that is better grown in and around the metropolis than in the provinces. The finest Gardenias which I have ever seen have been in some of the London nurseries and in Covent Garden Market. The varieties most generally grown for market purposes are Gardenia florida, f. variegata, and Fortunei. On the whole, I prefer Fortune's Gardenia; the flowers are larger than those of florida, and it also flowers more freely. The habit and constitution of the plant are also all that can be desired. It may, however, be remarked in passing that the variegated variety of florida flowers more freely than the normal type, and produces flowers almost equal in size and sweetness to G. Fortunei. There is a larger flowered variety called G. radicans major which produces flowers nearly as large, though not so finely shaped as those of G. florida. The variegated variety of G. radicans is almost worth growing as a fine-foliaged plant, and it flowers as freely as the green-leaved or normal type. The Gardenia citriodora is a plant of a character quite different from either of these, and is comparatively rare in cultivation. It is, however, very fragrant, with a strong suspicion of Orange blossom about the perfume. The flowers are also single. The old G. radicans is also a useful free-flowering variety much prized for bouquet making. G. Stanleyana is different in habit and flower from all the others, but as regards completeness it should hardly be named with them. It is a highly ornamental stove plant with large trumpet-shaped flowers something like those of a Datura or Brugmansia about 8 in. long and 5 in. across. Its colour is peculiar, the interior being a sort of reddish-brown approaching to crimson and margined with white. The place for this variety is the rafter, wall, or roof of a stove, as it delights in heat and moisture, being a native of Sierra Leone. The other varieties, with the exception of G. citriodora, which comes from Natal, are natives of China and Japan. The whole of them are, however, shade and heat-loving plants when in full growth; and the best places in which to grow Gardenias in perfection are close pits or houses where an atmosphere bordering on saturation and a top and bottom-heat of 65° or so can be maintained while they are making their growth and opening their flowers. Under such favourable conditions the foliage and flowers will be almost as large again as under drier and cooler treatment.

After flowering, Gardenias should be shifted into fresh pots if needful, and any pruning or training required should also be attended to. Under good culture, however, Gardenias can hardly be said to need either. Even the flowers should be gathered singly and mounted; as if cut with branches many shoots would be cut off, each of which in the natural course of things would have developed into a flower-bud. Pruning in the same way, by diminishing the number of the shoots, reduces the flowering capacities of the plants, and should be indulged in as little as possible. After the growth is completed and partially ripened, all the hardier varieties, such as florida, Fortunei, and radicans, may be placed for a few months in cold pits or even in a sheltered position out of doors throughout the warmer summer months. The comparatively sudden transition of the plants from cool to warm quarters quickly develops the flower-buds, as Gardenias bear forcing well, and seldom drop their buds, unless exposed in a dry atmosphere as well as to a high temperature. At one time the belief was almost universal that manure heat was necessary to the perfect culture of Gardenias; and doubtless many fine flowers were grown in manure beds by our fathers and by some of us in our younger days. Great merit was attributed to the ammonia not only in developing the size of the flowers, but also in filling them with fragrance; and, considering the close affinity between ammonia and some of our scents, this idea had a scientific basis to rest upon. But doubtless the chief use of the manure heat was the maintenance of a genial atmosphere around the roots and tops of the plants. Certain it is that Gardenias are now generally grown as well or better without manure heat than ever they were by its aid; and one of the best means of keeping up a constant supply of these sweet flowers is to devote a house for their cultivation, and plant them out in borders. Low span-roofed houses, with heated borders on either side of a central path, are, perhaps, the most handy for the wholesale culture of Gardenias; but lean-to houses also answer well. In the case of the latter, the whole of the back wall may be covered with the plants with several rows of dwarf plants in front. Houses of this sort will produce an immense quantity of flowers, for Gardenias may be forced into producing two crops in a year. They flower on or near the extremity of the young shoots, and as young shoots are produced and ripened the development of the flowers follows as a matter of course on the application of sufficient heat and moisture. Gardenias planted out also yield a long succession of bloom. The flowers being gathered at different times, the young shoots are also formed at different seasons, and large, well-established plants under liberal treatment thus get into a very useful way of semi-perpetual flowering, which enables the cultivator to gather many a welcome flower at almost any season. But of course Gardenias, by means of changes of temperature and treatment, may also be made to flower but once in a season, as is mostly the case with those cultivated in pots. Whichever mode of culture is adopted, the best soil for Gardenias is equal parts loam, leaf-mould, or thoroughly sweet and well-decomposed manure freely mixed with sharp silver sand. I am well aware that many prefer peat to manure or leaf-mould, and, no doubt, Gardenias do well in loam and peat, but they do better with the manure or leaf-mould. The drainage should be ample, but not excessive, as the Gardenia loves moisture when in full growth. When the pots or borders become full of roots, few plants enjoy manure water or turn it more rapidly to good account than Gardenias. Everything, however, approaching to over-feeding or over-saturation must be avoided.

The Gardenia has one failing, and that is, it is very attractive to mealy bug, and once this pest gets established it is difficult to eradicate. The surest means of keeping the plants clean is to mark the first bug and touch him with paraffin oil; this oil seems to kill at once. Thrips, aphides, scale, &c., are the result of errors of cultivation mostly, and will not occur under the above treatment. Soap may, and paraffin or a touch of turpentine will, clear them off at a single dressing.

Few plants are more easily propagated than Gardenias. Small pieces of the young ripe wood, inserted in silver sand, either under or without bell-glasses, in a sharp bottom-heat of 80° and a moist atmosphere, root readily. When rooted, pot off singly and grow on in a brisk temperature until the plants become large enough to flower, stopping or training if needful to form dense bushes—the best of all forms for Gardenias in pots. Much time is gained by this tropical treatment of young Gardenias, and the plants seem the healthier and flower the freer for it afterwards. One word of caution may be given to those who have not handled many Gardenia flowers. They are remarkably easily injured by careless gathering or rough handling, and every bruise will show and tell before many hours are over. Gardenias also look best mounted with their own leaves; the larger varieties of Myrtle form the next best setting. They associate admirably with delicate pink Roses, red Camellias, the softer pink and more delicate scarlet Pelargoniums, red or scarlet Spiræas, pink Lilacs, bright-coloured Pinks, Euphorbias, Begonias, Cyclamens, Primroses, Heaths, Calanthes, Dendrobiums, and other Orchids, &c.; while for a bridal or other wreath few flowers can equal in sweetness and graceful beauty Gardenias, white Spiræas, white Roses, and Lilies of the Valley, the Gardenia citriodora being used in such a wreath in lieu of Orange blossoms. D. T. Fish.

TORTURED CHRYSANTHEMUMS.

I have for many years been an admirer of the Chrysanthemum, having been much struck by the beauty of the plants at a show I once saw in a country town. These were, as a rule, strong, well branched and clothed, and carrying on each from twelve to twenty blooms in different stages of development, hanging with their natural grace from the ends of the branches. Not having seen an exhibition of Chrysanthemums since that time, I determined this week to visit the show at Bristol, expecting to see again these graceful forms with the improvements in size, colour, and growth which might naturally have accrued during twenty years of careful cultivation. There was never a more complete disenchantment. On entering the room I beheld numerous stands of plants, some tortured into the shape of an umbrella, others of a gigantic pork pie, but all having their convex surfaces covered with fine blooms, from thirty to fifty in number, but all in precisely the same stage of growth, and staring in the most unnatural manner straight up to the ceiling. Except, perhaps, in a stand of show Dahlias, I never saw floriculture so at war with æsthetics. I ask you to allow me to enter a protest against such treatment of my old favourites, not only on that ground, but because it must, I should think, tend to discourage their cultivation by amateurs and others who may, from seeing them thus elaborately tormented into strange forms, suppose that their natural habit is ungraceful or unpleasing. The misplaced industry displayed in the production of such specimens is, in fact, no proof of good cultivation, as we all know that it is easier by manuring and disbudding to persuade a Chrysanthemum to yield large, full flowers than to keep it in a robust, well-balanced form, capable of showing off its blooms to the best advantage. There is also a drawback to showing all the blossoms of a Chrysanthemum in their full development, in the circumstance that most of the favourite exhibition sorts being of incurved form, the backs of the florets only appear; and these surfaces being, in all, except the white and yellow varieties, more or less suffused with grey, the beauty and distinction of colour are, in the darker kinds, almost lost. It possibly arises from the fact that only a few kinds will bear the necessary manipulations for being twisted into specimen plants that a Chrysanthemum show (at least, the one I saw) presents so little variety. I had fondly hoped to make acquaintance with new flowers, or some of those beautiful sports from the older sorts for which the Chrysanthemum is remarkable, but no; with the exception of one or two new Japanese varieties among the cut blooms, stand after stand consisted of a repetition of the same flowers, so that if about a dozen I could name had been excluded, the stands would have been left bare. May I, in conclusion, venture to suggest that you might, if you concur with these remarks, give a figure of a specimen Chrysanthemum plant as it should appear? I cannot but think that your efforts of pen and pencil would go far to rescue our most beautiful winter flower from the barbarous usage to which it is now subjected by those who exhibit it. J. P.

ORCHIDS FOR COOL HOUSES.

Several correspondents having requested me to furnish a few details respecting Orchids which will thrive in a low temperature, I willingly do so, and I do it the more readily because I am sure that when the subject becomes more generally understood many admirers of Orchids, who have greenhouses, or even slightly heated pits, but who are deterred from attempting their culture by an impression that the temperature at their command is insufficient, will willingly try their skill when they can be made to understand that they can commence with every probability of success, and provided ordinary care be exercised, without the risk of losing their plants. The great argument (apart from the acknowledged beauty of the flowers) in favour of the culture of Orchids is that although the plants are rather higher in price than those of other classes, when good Orchids are judiciously purchased and carefully cultivated, the money expended in them is only invested, the plants being generally worth more each year. In a few cases where the accommodation has been very limited I have succeeded in getting the owners to make the attempt, and in every instance it has been found that not only was sufficient heat at command, but that the temperature formerly kept up was even too high to suit many of them. I was formerly induced to give the subject of cool treatment of certain Orchids more attention by a passage in a letter from my brother, then in Mexico, in which he urged that he was sure, from his observation in the Tropics, that we gave Orchids generally too much heat and too little air. Among other things he mentioned that at a certain season he invariably found ice in the hollows of the leaves of the Agaves growing in close proximity to the Orchids early in the morning. I consider we have been rather long in arriving at a correct conclusion with respect to the cool treatment of many Orchids when we call to mind the number of cold-loving or cold-bearing plants which we have found in the same regions, such as Calceolarias, Verbenas, Fuchsias, Lobelias, Bouvardias, Mutisias, Rhododendrons, Bambusas, and a host of others, many of which are quite hardy with us. As regards my own experience, extending over a period of twenty-four years, I must say that I have seen but few Orchids under cultivation killed or permanently injured by cold even under the most trying circumstances. Through failure of the heating apparatus, &c., on two or three occasions I have seen 4° of frost in the cold Odontoglossum house (a thing not to be imitated or approached), while on the other hand I have seen a great many Orchids killed or rendered valueless by excessive heat and want of air. In furnishing the annexed lists I shall confine myself to those showy varieties with which anyone who may be induced to grow them will be delighted when his care is rewarded by the production of their flowers. I shall also only mention such kinds as I have myself successfully treated in the manner described.

Before enumerating the varieties, however, it would be better to say that the successful culture of Orchids does not altogether depend on the temperature; there are other conditions not requiring much skill, but equally necessary, which I will set down in as few words as possible, viz., that cool treatment be regularly persisted in and the house not allowed to rise more than 10° above the minimum by day, except by sun-heat. On bright days when the sun gets power, heat should be shut off from the pipes and a little air given at top and bottom until the sun is off the glass, when the air should be taken off and the heat turned on again. The valve regulating the heat should be carefully studied, so as to know exactly how much it should be turned in order to get the required heat, for if turned full on the circulation is generally too rapid and the heat thrown off too strong, in which case the plants rapidly decline. That the plants be watered with cold rain water only, and never watered overhead or syringed summer or winter; watering overhead keeps the plants up by means of the top and does not encourage them to root as they do when watered in the pot and aided only by the moisture in the air. That during winter the distribution of water about the house for the purpose of evaporation be kept well in hand, so that at night and even during the daytime in severe weather the house is comparatively dry. That the plants be grown on open stages at a distance, where practicable, of from 1 ft. to 4 ft. from the glass, and in full light; where fixed open stages are not available, the plants should have a temporary wooden stage erected for them over the close stage by placing boards about 6 in. wide (at progressive heights) on bricks, an inch or so of space being left between each board, or by placing the plants on inverted flower-pots, raising them to the required height in order to allow of the air playing freely around them. Stagnant damp in winter is more fatal than cold, and to avoid this, means should be provided for giving a little air at top and bottom. This latter I provide for by removing a brick as near the ground as possible in every 4 ft. run of the house, and one at either end. These air-holes I leave open summer and winter. That the cultivator keep an eye to the last matured growth, and immediately water any plant showing the least sign of shrivelling as regards such growth, taking care not to overwater a plump plant. That care be taken not to hang baskets or blocks over the plants on the stages, and to distribute them sparingly, frequently changing their relative positions, taking them down to water them, and allowing them to drain before being replaced. Where Orchids are to be grown as cool as possible, it is best to have them potted or basketed in two-thirds fibry Orchid peat in lumps, and the remainder living Sphagnum Moss, without admixture of sand in any case. I find that roots sent out into the peat are more easily kept good under adverse circumstances than those in any other material. The Sphagnum Moss, however, is useful, particularly in summer, through its growing and keeping a healthy moisture around the plant.

The first list, from which I have excluded those varieties which appeared to me to be doubtful or difficult, comprises Orchids which will thrive in a minimum temperature of from 40° to 45° Fahr.; the 45° to be considered as the general minimum, with a possible fall to 40° Those marked *b* should be in baskets or on blocks. The Mexican and Guatemalan varieties to be kept drier than the majority of the others.

Orchids thriving in a minimum winter temperature of from 40° to 45° Fahr.:—

- Angræcum falcatum *b*
- Anguloa Clowesi
- Acineta Humboldti *b*
- Ada aurantiaca
- Barkeria Skinneri *b*
    - elegans *b*
    - spectabilis *b*
- Bletia hyacinthina
- Bonatea speciosa
- Calanthe Sieboldi
- Cattleya citrina *b*
    - Trianæ
- Cœlogyne barbata *b*
    - corymbosa *b*
    - cristata
    - ocellata *b*
- Colax jugosus
- Cymbidium eburneum
    - Mastersi
    - sinense
- Cypripedium barbatum and varieties
    - Boxalli
    - caricinum
    - caudatum
    - insigne and varieties
    - longifolium
    - Roezli
    - Schlimi
    - Sedeni
    - venustum
    - villosum
- Dendrobium Cambridgeanum *b*
    - chrysotoxum *b*
    - cœrulescens *b*
    - Devonianum *b*
    - Falconeri *b*
    - Griffithianum *b*
    - japonicum *b*
    - Linawianum *b*
    - nobile, some varieties *b*
    - speciosum
- Disa grandiflora
- Epidendrum vitellinum
- Goodyera pubescens
- Lælia anceps *b*
    - autumnalis *b*
    - furfuracea *b*
    - majalis *b*
- Lissochilus Horsfalliæ
- Lycaste aromatica
    - gigantea
    - Skinneri and varieties
- Masdevallia amabilis
    - Chimæra
    - coccinea
    - Davisi
- Masdevallia Denisoni
    - Harryana and varieties
    - ignea
    - Lindeni
    - nycterina
    - polysticta
    - Veitchiana
- Mesospinidium sanguineum
    - vulcanicum
- Odontoglossum Alexandræ (crispum)
    - Andersonianum
    - Bictonense
    - Cervantesi
    - cirrhosum
    - citrosmum
    - coronarium
    - constrictum
    - gloriosum
    - grande
    - Halli
    - hastilabium *b*
    - Insleayi
        - Leopardinum
    - luteo-purpureum
    - maculatum
    - membranaceum
    - miniatum
    - nævium majus
    - nebulosum
    - odoratum
    - pardinum
    - Pescatorei
    - pulchellum
    - roseum
    - Rossi
    - Schleiperianum
    - triumphans
    - Uro-Skinneri
- Oncidium aurosum

Orchids thriving in a minimum winter temperature of from 40° to 45° Fahr.:—

- Oncidium bifolium *b*
    - cheirophorum
    - cucullatum *b*
    - flexuosum
    - leucochilum
    - macranthum
    - nubigenum *b*
    - obryzatum
- Oncidium serratum
    - stelligerum
    - tigrinum
    - varicosum *b*
- Pleiones—all the varieties
- Sophronitis militaris *b*
- Trichosma suavis *b*

For these varieties artificial heat can be altogether dispensed with from the middle of April until the third week in October, or longer if the weather be mild.

Orchids thriving in a minimum winter temperature of from 50° to 55° Fahr.:—

- Aerides crispum *b*
    - Lindleyanum *b*
    - Warneri *b*
- Arpophyllum giganteum
- Brassavola Digbyana
- Cattleya Aclandiæ *b*
    - amethystina
    - bulbosa *b*
    - crispa
    - guttata
    - intermedia
    - labiata
    - Leopoldi
    - marginata *b*
    - maxima
    - Mossiæ
    - Schilleriana *b*
    - Skinneri
    - Warneri
- Cypripedium concolor
    - Harrisianum
    - hirsutissimum
    - niveum
- Dendrobium Bensoniæ *b*
    - chrysanthum *b*
    - crassinode *b*
    - cucullatum *b*
    - densiflorum
    - Farmeri
    - formosum
    - lituiflorum *b*
    - luteolum *b*
    - nobile, varieties *b*
    - Parishi *b*
    - Pierardi *b*
    - primulinum *b*
    - suavissimum *b*
    - thyrsiflorum
    - transparens *b*
    - Wardianum *b*
- Dendrochilum filiforme
- Epidendrum ciliare
    - atropurpureum
    - syringæthyrsus
- Lælia Dayana *b*
    - elegans
    - Perrini
    - pumila b
    - purpurata
- Maxillaria Harrisoniæ
    - picta
    - Turneri
    - venusta
- Miltonias—all the varieties
- Odontoglossum Phalænopsis
    - Roezli
    - vexillarium
- Oncidium Cavendishianum
    - crispum *b*
    - cruentum
    - Kramerianum *b*
    - Marshallianum *b*
    - ornithorrhynchum
    - Papilio *b*
    - Philipsianum
    - pubes *b*
    - pulvinatum
    - sarcodes *b*
    - Weltoni
- Sobralia macrantha
- Stanhopeas—all the varieties *b*
- Trichopilia—all the varieties, including Pilumnas
- Vanda cœrulea *b*
    - cœrulescens *b*
    - suavis
    - tricolor
- Warscewiczella and Pescatorea—all the varieties
- Zygopetalum—all the varieties

Along with these may also be grown many of the varieties enumerated in the preceding list, if care be exercised—some of them, such as Cypripediums, Dendrobiums, and Oncidiums, even with advantage.

The cultivator should water these varieties as little as possible throughout the winter consistent with preserving the plants in a plump condition, so as to retard as much as possible the young growth until the days begin to lengthen; but any plants which will grow should have the best possible place and attention given them, each plant being treated by itself and without regard to the condition of the others. On the care given to the individual plants depends the success of the whole. It is of the first importance that the plants should be obtained from some nurseryman on whom reliance can be placed that they have been fairly treated, and not grown in any unnecessary heat. During the present winter we mean to make a trial with some of the varieties enumerated in the first list in an unheated house (where they are at present), and respecting which I hope to give an account in the spring. JAMES O'BRIEN.

Pine-apple Nursery, Maida Vale.

Bamboo Mat Shading.—Concerning this, one of the best of shading materials for glasshouses, Dr. Wallace, of Colchester, writes to us as follows: "We have had this shading in use for the past five years, and we find it to be just as good now as when first put up. We have just got over, after much trouble, a small consignment of these Bamboo mats for introduction as Orchid-house shading. They are, perhaps, the cheapest shading out, being about 3¾d. per square foot; they only require a small roller at the bottom to stiffen them, and they roll up on the principle of the Cunningham mode of reefing sails."

FERNS FOR PLANTING IN COOL CONSERVATORIES.

Mr. Champ does not say whether he requires the Ferns for which he asks (p. 454) for rockwork or otherwise, but the following are the best of any I know, and I do not think the list can be improved: The first I would specially recommend is Woodwardia radicans, a grand Fern, having handsome drooping and gracefully-arching fronds, which, when the plant is fully established, grow from 3 ft. to 6 ft. long, and keep in a fine, fresh-looking condition the whole of the year where unaffected by sharp frost. Although tolerably hardy, it will be quite as well to protect the crowns by means of dry leaf soil or Cocoa-nut fibre if the temperature of the house ever runs down much below 30°, otherwise the soft embryo fronds are apt to sustain injury. Being naturally of a very pendulous habit, it should be planted high up in the rockwork, and allowed plenty of room and soil for its roots to ramble in, or if grown on the flat, it will be necessary to stake and tie up the fronds a little to keep them from spreading flat on the ground. Good rough lumps of loam and peat with plenty of water all through the summer will grow this fine Fern in perfection, and anyone requiring a handsome ornament for a large elevated vase or basket will find this one of the very best plants they can use. Protected in the manner above mentioned, it will live out in the hardy Fernery, and there forms an exceedingly ornamental object, and very distinct among others. Next to the Woodwardia in point of merit is Lomaria chilensis, a truly noble species, having smooth, dark green fronds, from 3 ft. to 4 ft. long, rising from a large, scaly crown that creeps along the ground or over the edge of rockwork, to which it clings with great tenacity, and soon spreads over a large space. Lomaria magellanica is another fine Fern, the fronds of which rise from a densely-covered crown of a massive tree-like stem, and are very broad and gracefully arching; when fully grown it forms altogether a fine object, but is not quite so hardy as the preceding. Cyrtomium falcatum is quite an acquisition either indoors or out, and is as distinct and striking among Ferns as the Holly is among evergreens, the fronds being much of the same character of that well-known shrub so far as regards their thick texture, and rich dark green glossy appearance. This fine Fern is sufficiently hardy to stand out in favoured localities without protection, and should be in every Fernery. Adiantum pedatum is another Fern of rare merit, and the only drawback it has is that it is deciduous, but for all that it ought to have a place even among the most select, as the delicately-tinted green of its beautifully radiating fronds makes it a very conspicuous object wherever grown. Lastrea Filix-mas cristata is a highly ornamental Fern, having fronds about 2 ft. long, the margins of which are beautifully crested up their entire length, and terminated with more densely tufted points, the weight of which causes them to arch over in the most graceful manner possible. Lastrea opaca is likewise a very fine Fern, and a somewhat recent introduction from Japan. This has fine spreading, deep green fronds that always look the picture of health on account of their bright polished appearance. Lastrea Standishi is another remarkably fine species from the same country, and quite distinct from the foregoing, the fronds of which are very large, of a pale green, and most elegantly divided. Lastrea Sieboldi is also a fine variety of this numerous family of Ferns, having spreading, very broad, triangular, deep green fronds rising from a strong crown after the manner of Cyrtomium falcatum. Lastrea Goldieana, too, is a strikingly ornamental kind, and well worth growing in any collection where space can be afforded. Polystichum falcinellum is one of the finest of the Polystichums, and this, with P. pungens and P. Brauni, are the best of the exotic varieties of these that obtain much size. Asplenium lucidum is one of the most showy of Ferns, and makes a remarkably fine bold plant where it can have plenty of room to develop itself properly. Dicksonia Culcita is likewise a very grand Fern that makes noble fronds 4 ft. to 6 ft. long, of a fine bright green colour, which, when fully matured, and in a fertile state, are thickly dotted on the under side with dark brown spores that add much to their ornamental appearance. Davallia canariensis, better known as the Hare's-foot Fern, is a general favourite, and does remarkably well where it can have just a little shelter during very sharp weather. Pteris cretica, P. c. albo-lineata, and P. scaberula are all sufficiently hardy to succeed in such a position as that your correspondent names, and are considered quite choice even among the best of greenhouse collections. If deciduous kinds are not objected to, Struthiopteris germanica is sure to please, as the fine fronds it makes are regularly arranged just like the feathers in a shuttlecock, and droop over at the points in a graceful curve, thus giving the plant a very stately look, and making it a most conspicuous object wherever it may be placed. Onoclea sensibilis is also a very beautiful Fern of a fast-spreading habit, but it is one that likes plenty of shade and moisture and a loose soil in which it can ramble freely.

S. D.

COOL-GROWN BOUVARDIAS.

"J. S. W." (p. 465) has done well to direct attention to the matter of growing these lovely flowers in a low temperature, because this points directly to their being within the reach of cultivators generally; whereas growing them in a temperature of 70°, 80°, and 90°, with fire-heat during the greater part of the year, must not only limit the number of plants grown in many places, but would deter thousands from even attempting their cultivation. My experience is that Bouvardias are plants that may be grown as easily as Chrysanthemums. They may be brought to perfection with little more heat than that afforded by a cold frame; indeed, after the plants have done flowering they may be placed in a frame. Here they will start into growth in March. The young shoots may then be made into cuttings, and rooted in a top and bottom-heat of 60°, in which they may be grown until May, either in a frame or house; but after that time they may be hardened off, and the earlier in June they are placed entirely out-of-doors the better. If they are not planted out the pots should be plunged in ashes, or something of the kind, in a situation fully exposed to the sun. This is of far greater benefit to them than a high house temperature at any time, because when the plants are grown under cool treatment and fully exposed to the sun there is not the slightest danger of their not flowering satisfactorily in autumn in any heat between 40° and 50°. It should be fully understood that they are greenhouse and conservatory plants and not stove subjects, a fact which cannot be made too widely known by all who wish to extend the cultivation of these fine-flowering plants.

Cambrian.

—— "J. S. W." is right in saying that a good deal of difference of opinion exists as regards the treatment of Bouvardias, but he is not equally correct when he says that there can be only one right way. What the right treatment should be is simply determinable by the end sought to be obtained. Those who have not the means or inclination for keeping their plants warm enough to obtain from them the greatest quantity of flowers they are capable of producing through the winter season will be satisfied with the results of cooler treatment, but in writing what I did on the subject I was simply suggesting treatment based on what I had proved in practice to be calculated to give the best return, viz., the production of the greatest quantity of fully-developed flowers. "J. S. W." says shoots made during winter in a stove temperature produce poor flowers. Of course they do, but this only applies to some plants, not to all in cultivation by a great many, that is, if the grower be properly up to his work and treats them so as to impart to them the vigour indispensable to the development of flowers possessing sufficient substance. I have reason to believe that there are few who have been engaged in the cultivation of any considerable number of plants that have subjected many of the different species which they have grown to such a wide range of temperature from that which is generally looked upon as below the orthodox minimum to the opposite of being too high as I have done, especially the latter, by subjecting them to more heat than it is often supposed they would bear or do well with; but the heat which a plant will bear and do the best under I have found to be quite as much determinable by the condition of the plant, consequent upon its general treatment from the cutting pot upwards, as upon the country from which it comes, and this especially with such plants as Bouvardias and others similarly used that are generally grown up from cuttings in a year or a little over, flowered, and then thrown away to make room for others grown in a like manner to take their place, or otherwise headed down and grown on for a second season.

T. Baines.

Pot Chrysanthemums for Exhibition.—It cannot be conceded that the Chrysanthemum, as grown in the ordinary distorted form for exhibition, in the shape of an even, compact bush or as trained down like an inverted saucer, possesses either grace or elegance. Growers of plants for exhibition are seldom concerned as to free or natural growth; their great object is to show as much bloom as possible, and in doing this invariably do it in a most formal way. The Chrysanthemum has naturally a habit that does not well accommodate itself to the purposes of the exhibitor, and therefore there must be pinching, depressing, distorting, and training to secure the required dwarfness and the proper outline. In no form, as exhibition plants, are they more pleasing than when shown as standards, if the growth be natural and the heads carefully, but not stiffly, arranged. Some standards grown by Mr. Levesley appear to me to exceed in elegance and beauty all his fine-trained plants; each stem is about 2½ ft. clear, and the pyramidal head of foliage and bloom about 3 ft. in height. Such plants as these would have a superb effect if grouped amidst a bank of fine-foliaged plants. In the large-flowering trained plants special formality is added by the peculiarly formal or ball-like form of the flowers; and when a plant is seen in which a roundish form of training is aimed at, and all the shoots, topped by a large round flower, are tied up with extreme rigidity, it must be admitted that it requires a considerable amount of the florist's enthusiasm for perfect blooms to enable one to become entranced with the plants as a whole. That good effective plants of Chrysanthemums can be grown in pots with a minimum of training there is no doubt, as is evidenced in plenty of gardens where showing is not the order of the day.—A. D.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Cheap Basket for Ferns and Orchids.—Few baskets can be made more quickly or cheaply than those formed of virgin cork. Suitable pieces, cut in equal lengths, can easily be made into a round basket by means of strong wire, and a bottom may be fixed in a like manner. Club Mosses and Ficus minima grow readily on cork, and an elegant green basket can thus be obtained, which, if filled with Orchids or Ferns when suspended from the roof, has a fine appearance.—S.

Watering Camellias.—Many who have well attended to their Camellias during the summer and autumn are apt to cause themselves irreparable loss in the matter of bloom by neglecting to water them properly at this season. Those rules which apply to most hard-wooded plants with respect to watering in the winter do not hold good in the case of Camellias. They must not stand dry, and if they once become so, water them twice in the interval of a day, so that the balls may become thoroughly saturated. In dull, damp weather, when judging in the ordinary manner is deceptive, tap the pot; a clear ringing sound denotes the necessity of a good moistening. Bud-dropping is extremely vexatious, and a want of moisture at the roots and a too confined atmosphere are fertile sources of mischief in this way.—J. Cornhill, *Byfleet.*

Growing Palms in Loam.—Though generally found growing in peat, nearly all Palms succeed equally well in loam. We lately saw examples of Cocos Weddelliana in Mr. Peed's nursery, Norwood, growing entirely in yellow loam, and seldom have we seen more healthy plants, the foliage being much darker and more glossy than that in plants grown in peat.—S.

Winter-flowering Pelargoniums.—These were well represented at South Kensington on the 19th ult. by a fine group of dwarf, well-flowered plants of the Vesuvius type, named respectively Salmon and White Vesuvius—kinds similar in all respects to the original Vesuvius, except in colour. They were shown by Mr. Cannell, of Swanley, and were of a useful size for decoration, and probably more seviceable for supplying cut flowers than large specimens. I also noticed some very fine bunches of cut blooms of the best varieties, the colours of which were extremely rich, and certainly better than can be had during the hottest months of the summer. This is probably owing to the blooms having more time to develop their full beauty, a cool, dry atmosphere and subdued light being apparently more favourable for this purpose than a maximum amount of sunshine. As regards culture, the principal points are growing the plants during summer in some fully exposed situation, so that the growth may be firm and well matured, and keeping all blooms pinched off in order to concentrate the energy of the plants in the wood. About the end of September the plants should be transferred to a light, well-ventilated house, where a little fire-heat can be applied sufficient to create a light, buoyant atmosphere, with plenty of ventilation on all favourable occasions. As the blossoms expand a little artificial manure applied in a liquid form will greatly assist the development of the blooms. The many beautiful varieties that have been raised during the last few years fully attest the successful results of careful hybridising, as both in habit of growth, sturdiness of footstalks, and substance and form of petals, one would scarcely credit that they are the descendants of the ragged, flimsy flowers of olden times.—J. G., *Linton Park.*

Violets in Pots.—Violets are just now unusually plentiful for the time of year. We may, however, possibly suffer from a dearth of them later on in the season. If the convenience of a cold frame can be had, or a space in the greenhouse accorded them, a few potfuls taken up now will be found very acceptable, when there are none to be found out of doors. A pot full of Violets in a room, or a few in the conservatory, afford a delicate and refreshing odour.—J. Cornhill.

TREES, SHRUBS, & WOODLANDS.

PINUS INSIGNIS.

My experience with this Pine is, that it is often planted in too sheltered positions, and, consequently, gets much injured from making spongy growth. Being about one of the first to commence growing in the spring, it is liable to be injured by frost in May, and again early in winter; vigorous young plants often make a second growth, which rarely ever gets matured, and the consequence is, that if the winter be severe they succumb. There is at Ashburnham, in Sussex, a very fine plantation of this tree, which was planted about the year 1840, and, with very few exceptions, all have survived. The position is a northern one, on a stiff clay, previously well drained. These trees cannot be termed perfect specimens, owing to their being planted too thickly, but, taking the plantation as a whole, they are very fine, and have a pleasing effect when viewed from a distance; many of them are from 40 ft. to 50 ft. high, with good trunks. The exposed situation occupied by this plantation has a tendency to check luxuriant growth, and to encourage compact, well-ripened wood, and, moreover, abundance of cones, from which large numbers of plants have been raised. Young trees of this Pine are so frequently "coddled" in pots for years after being raised from seed, that it is almost impossible to disentangle their roots; and if they be planted with the balls entire, they will not withstand a strong gale. When grown in pots or boxes when young, the roots should be shaken out thoroughly every season, with as little damage as possible to the rootlets. By this method they will be found to flourish much more satisfactorily than when planted permanently, because the roots will be more pliable, and readily spread out without injury. Another mistake is often committed in not planting this Pine out permanently when about 3 ft. high, as when larger it cannot be so safely transplanted. As regards the value of the timber, I cannot speak practically; still, in the case of several trees which were cut down, it was found that they contained a good amount of resinous matter, and that the timber was pretty hard, but not so close grained as Scotch Fir. A. Hossack.

Ragley, Alcester.

—— Rich and beautifully green as is the colour of Pinus insignis where it succeeds, it is in many places one of the most disappointing of Conifers, and should never be planted unless in sheltered situations, as, where the wind gets at it, or it is exposed to severe cold, its foliage gets sadly browned and its growth stunted, a condition in which it is anything but ornamental. Mr. Baines has, therefore, done well in warning intending planters against its extensive use. No doubt, it will do well in the southern or south-western counties of England, and, I remember, some twenty-seven years ago there used to be a very fine specimen of it at Bowood, but how it fared in the sharp winter of 1860-61 I have not heard, or whether it is now in existence or not. Pinus Cembra comes nearest to it of any Pinus I know, as regards colour and habit, and, being of a more limited growth and exceedingly hardy, is well adapted to take the place of P. insignis where that variety cannot be grown. For small pleasure grounds or villa gardens where space is circumscribed, this is one of the best of Conifers to use, and shows up in most pleasing contrast with the silver-grey of the Deodar or any other light foliage of similar character. My favourites amongst Coniferæ for planting as single specimens where space can be afforded for them to develop themselves are Picea nobilis, P. Nordmanniana, and P. cephalonica, all truly noble objects; the latter, however, is somewhat tender, and should only be planted in positions where the sun does not shine on it in the morning so as to excite early growth or cause a too rapid thaw after severe frost, as that is how the soft, prominent buds generally get injured. P. nobilis and P. Nordmanniana will endure almost any amount of frost, as will also P. grandis, which is another very fine Conifer that should have a place even in the most select collection. P. austriaca is, as Mr. Baines states, one of the most valuable of Coniferæ, and so hardy that it will succeed almost anywhere; besides which, its timber is of great use for the roofing of sheds and other building purposes of a similar description. For growing for ornament as well as profit none surpasses Abies Douglasi, the growth of which in free, loose soils is as rapid as that of the Larch, and the tree, containing as it does so much resinous matter, would, no doubt, form sleepers for railways and telegraph posts quite as or even more durable than those obtained from the latter. The wood of the Douglas Fir when cut down is remarkably heavy, and were it only better known and more plentiful, it would not be long before planters would turn their attention to it and grow it extensively. With those who preserve game, the Spruce is a favourite, as pheasants are known to be fond of its friendly shelter, and cannot be seen in it by poachers at night, but as the Douglas Fir sends out its branches in the same horizontal way, it is just as useful for the same purpose, and of far more value in every other respect. S. D.

AUTUMN AND SPRING PRUNING OF TENDER SHRUBS.

It seems to me that a good deal of discrimination is necessary in the pruning of certain kinds of the more tender shrubs. I do not believe it is at all safe to prune trees or shrubs that are apt to be injured by frost in the autumn; Roses, for example, which are newly planted if pruned in November or at the time of planting, are far more likely to suffer or even die than those which are left unpruned. For this reason I have long since discontinued pruning newly-planted Roses, feeling quite certain from past experience that it is by far the safest plan. Nor is it advisable to prune tender varieties before spring for the same reason. In some way or other the pruning enfeebles them, and of course the more severely the plants are pruned, the more likely they are to suffer. I have an impression that more Roses die the first and second year after planting than at any other period of their existence, and I have little doubt that they die because they are usually sent from the nursery with such poor roots, in the case of the Brier at least, which has a root more like the head of a walking stick than anything else. It is often recommended to cut down Laurels and evergreens at this season, but such advice is questionable. It can be no benefit to a plant to be headed down at the approach of winter, during which time the naked stumps will be exposed to all the vicissitudes of our changeable climate at its worst season. I find that bushes cut down at such a time do not heal over so quickly as those cut over when the sap is just beginning to rise, and this applies to old and feeble trees more than to young ones in vigorous health. The stumps, instead of growing away at once, as they do after spring pruning, have to remain in a dormant condition all the winter and during the following summer; instead of healing over the bark decays and the wood dies back. The fresh break of young shoots becomes vigorous when decay is partly arrested in the bark, but it goes on down the centre of the limb, often with bad consequences to the tree a few years afterwards. But no kinds of plants exhibit the bad effects of being cut back at the beginning of winter more than some of our common herbs, at least in cold soils and cold localities. The Lavender, if cut down to a stump in October, frequently dies off to the root, while the Sage is invariably killed under the same treatment. Winter Savory, too, often dies under the same treatment, and even the hardy Thyme, when all the green shoots are cut away, goes off in cold winters; while, on the other hand, all three survive when their summer's growth is left upon them, even in the worst winters. This I have observed so often as to remove any doubts on the subject, and it is the same with many kinds of tender shrubs.

J. S. W.

WOODLAND WORK FOR DECEMBER.

Weather permitting, the planting of deciduous trees of all kinds may still be carried on in the woodlands; but, with the exception of the hardier sorts, no evergreens should now be removed, and those of a large size, which have been lately transplanted, may receive a good mulching to keep out frosts. In exposed places some tender evergreen shrubs, such as the Magnolia, should have a covering of mats during severe frosts. Now is a good time to secure abundance of leaves for rotting, to examine and clear out shrubberies, and to plash hedges which, from previous neglect, require this mode of treatment; but no hedges of an evergreen kind should now be meddled with. Hedges of Hawthorn may still be planted upon the level in fairly dry soils, and upon a raised bank or dyke on clayey lands. As the Hawthorn does not flourish upon very light sandy soils, when planted upon these a compost of part clay should be well worked into the land, and it may be desirable to mix a few Beech plants with the Hawthorn. Upon heavy clay soils an admixture of lime and road-scrapings will be found advantageous to the young Quicks. Three-year-old plants which have been two years transplanted, will generally be found strong enough.

In cutting off young plantations for the first time, great care should be taken to use only good cutting tools and to finish off the work well. In thinning screen plantations the woodman must, to a great extent, be guided by the depth or thickness of the belt. When it is narrow the removal of any considerable number of trees would mar its effect; but when its extent will permit of such treatment, the best way to secure a permanent screen is to keep the front trees well thinned out from the commencement, so as to allow them to branch low. By such means also a gradual increase in the height of the trees from the front line to the centre is secured, as those in the interior, from being more crowded, are the more rapidly drawn up.

This is a good time to scour out all open ditches in plantations, and to distribute the soil evenly among the young trees, as by this means the fallen leaves are at once fixed, so that they decay *in situ*, instead of drifting and filling up the watercourses or choking pinnocks and culverts. New ditches should also be cut where required. Though great attention is paid to letting off water from young plantations the ditches are often allowed to fill up as the wood gets older but as the roots of trees penetrate deeper into the soil the necessity for removing stagnant water increases, and instead of the watercourses being allowed to fill up they should be gradually deepened. This is more especially the case with plantations of Larch and Spanish Chestnut. Unsoundness of timber is frequently caused by the presence of too much water in the soil in which it grows.

One of the principal operations of the month will be the felling of timber. Where the trees to be cut down stand singly they may be grubbed, and in some cases a little more measurable timber may be secured by this method; but in close plantations grubbing cannot often be carried out without interfering to some extent with the roots of the "stores" or of the underwood. Here the cross-cut saw is decidedly the best implement when placed in the hands of experienced and expert woodmen. But timber felling in such situations is an operation which requires both skill and judgment in the workmen. Having fixed upon the position in which the tree is to be laid, they must next compare the size of its head with the available clear space beneath, and lop off branches where necessary, both to equalise the balance of the head and also to prevent damage being done to the "stores." Then a triangular notch should be cut into the bottom of the trunk close to the surface of the ground, on the side towards which the tree is to fall, and exactly at right angles with the line of fall. Next, the saw should be inserted on the opposite side, the cut being kept open so as admit of its working freely, by wedges placed behind it, which may be driven home from time to time as required. Whenever the saw binds more on the one side than the other the wedge immediately behind that part should be tightened. By such means a skilful workman will, upon a calm day, place almost any tree within a few feet of the line selected for its fall. But on all occasions, and more especially in windy weather, or where the plantation is thickly stored, a guide rope is desirable; it takes but a short time to fix, and often prevents damage. In dry weather dig young plantations of Birch, &c., and clean hedgerows. In the nursery continue trenching, laying the soil as roughly as possible in ridges; also dig among young plants and undercut or remove the tap roots from strong Chestnut and Oak which are to remain another year in the lines. Collect cones of various kinds, and examine well the rot heap, giving it a little additional covering to keep out frost.

A. J. Burrows.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Honeysuckles on Fir Trees.—In our shrubbery borders and woodlands we have some fine Honeysuckles that have been planted near the bare stems of Scotch and other Fir trees, and supported until they reached the lower branches; after that they support themselves and make a fine display. Some of the Clematises would also look well in similar positions.—J. Groom, *Linton Park, Maidstone.*

A Pretty Combination.—I saw from a distance this season a large specimen Irish Yew, about half-way up which a branch of Guelder Rose had grown through it and developed its flowers on the front of the Yew. Nothing could have been happier or more distinct; the flowers of the Guelder Rose looked beautifully against the dark green background.—T. Smith, *Newry.*

Irish Yews.—I agree with Mr. Groom (p. 428), that Irish Yews left to their own unrestricted growths are apt to look unsightly. Now and then, a few of them left to Nature have, however, a grand, massive appearance, but they are apt to be disfigured and ruined by snowstorms, Moss, and heavy rains. To preserve them as pyramids, they must either be frequently tied in, which involves much labour, or confined to a single leader from the first. Treated thus, and all offshoots forced into secondary importance by persistent pruning, the Irish Yew becomes and continues one of the most beautiful and natural of all pyramidal shrubs and trees.—D. T. Fish, *Hardwicke House, Bury St. Edmunds.*

The Trees in Sackville Street, Dublin.—It is with pleasure we observe that those wretched-looking trees which have been disgracing this fine street for the past three or four years are about being removed, and their places occupied by others, which we trust will have a longer and more prosperous career. It is but right to state that this is due to the public spirit of one who has ever been ready to aid in any enterprise likely to promote the cause of horticulture in this country. It is scarcely necessary for us to say that we allude to Mr. Niven, of the Garden Farm, Drumcondra, who has generously presented the trees to the citizens free of charge, merely stipulating that the Corporation make the necessary preparation for their reception.—"Gardeners' Record."

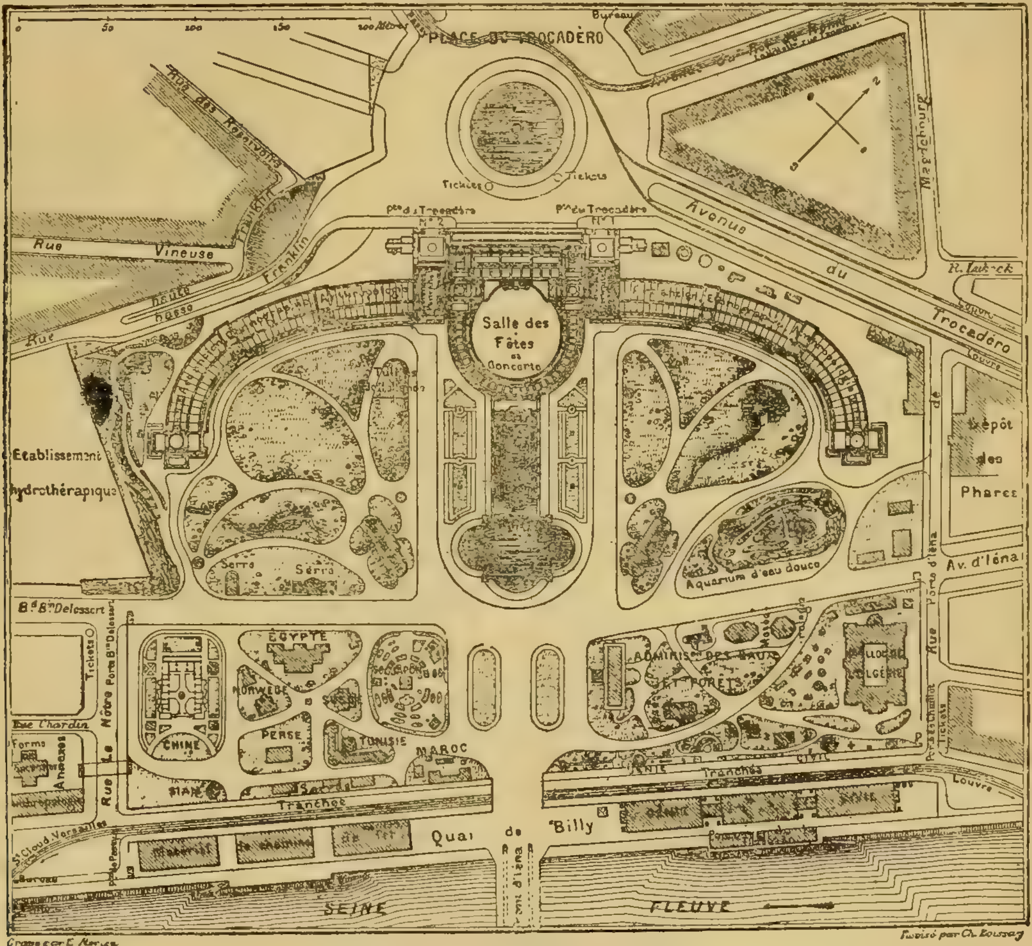
HORTICULTURE AT THE PARIS EXHIBITION.

Among the various districts round Paris devastated by the Franco-Prussian war that of Vitry suffered terribly. One morning in March, 1871—the week when the Commune began its work—I saw a nursery garden there, belonging to M. Defresne, which was the picture of desolation—not a tree or shrub over the many acres covered by the garden that was not cut down to within a few inches of the ground. In the house, recently deserted by the soldiers, no one was visible, and the rooms, piled with rubbish, were like nothing so much as ill-kept manure heaps. Some of the finest groups of evergreens and other trees and shrubs in the grounds of the present Exhibition came from this same nursery at Vitry—just such masses of graceful and rare specimens as the Waterers or Veitch could select from their best collections. This case is typical of the resurrection of France. In no way is her recovery more marked than in the vast zone around Paris which was cleared of houses and gardens to allow of the defence, and in the still wider district ruined in whole or in part by the operations of the two contending armies. Only those who saw this desolation can know what war meant to the inhabitants of the suburbs of Paris, and can fairly estimate the happy change and the progress that have since taken place. The result is not only gratifying to all who know and like France, but also as proving that even the blighting demon of war is not potent for lasting evil in the face of the efforts of a laborious and intelligent population. The results alluded to were very evident at the Exhibition, where, notwithstanding none but the most trifling concurrence from other countries, the horticultural and arboricultural interest was very considerable.

As to the general design of the extensive series of gardens round the Exhibition, it would be captious to have expected much where so many wants had to be provided for and where so many buildings were placed in the grounds. Yet it would probably have been difficult to dispose of the gardens to better advantage, excepting the portion immediately in front of the Trocadero Palace. The general effect of this pretentious building—far from happy in the effect of its central mass—is interfered with by the arrangement of the "garden" in front—a gigantic basin with water squirting up, and brazen heads vomiting water, large brazen casts of animals on the margin of the basin, and water tumbling down a series of steps on each side of the basin and central cascade—these helped to destroy any good or dignified effect the building might otherwise have had. These poor theatrical effects—for they really have nothing to do with the art of garden design—are deeply embedded in the mind of the ordinary landscape gardener, and also by such architects as attempt the laying out of gardens—always greatly to the detriment of the gardens. One of the blemishes of the many and fair gardens of Paris is, indeed, this weakness for unmeaning stone ponds of water. Wherever a large open space exists at a crossing a circular pond-basin is pretty sure to be placed there. Recently one of these huge basins has been placed behind the Trocadero building, a big pool with an immense rosette of water-pipes in the centre like a pile of old bottles on a stage, the whole surrounded by a common ribbon border and occupying a space that might easily be converted into a charming little lawn with groups of trees and shrubs and flowers. At first sight it might appear difficult to attempt the formation of artificial water in the grounds of a big show, given for a season only, yet it has been attempted here, and, with the exception of one point, very well done. Its one fault is the hardness, baldness, and formality of the margin, following too often false and conventional lines. The error is the more noticeable from the fringe of rock gardens which spring from the water in parts, and from the little cascades, and stepping-stone bridges being very natural and graceful in form. Much of the rockwork at the Exhibition is extremely well done, and there is an immense extent of it, considering the labour and expense involved in the formation of even a small portion. Considering the absurd crudities with which, under the name of rockeries, gardens are often disfigured, the effect of the various artificial rock gardens at the Paris Exhibition can scarcely fail to be beneficial in their effect on garden design. The big flanking rock garden to the right of the Trocadero is particularly worthy of remark, well answering its purpose of concealing a very steep and high bank, which otherwise would have been difficult to deal with. The whole of the rock gardens were most gracefully draped and garlanded with climbing and trailing plants surprisingly fresh and vigorous considering the short time since planting.

The grounds were adorned with a vast number of ornamental trees and shrubs, which displayed a freshness and vigour sufficient to make light of all transplanting difficulties. At no exhibition of the kind hitherto organised has anything like the immense number of trees and shrubs been seen, individual nurserymen sometimes occupying or embellishing more than an acre of ground—making, in fact, an exhibition of his own. Thus one of the Leroys, of Angers, showed 500 kinds of evergreen shrubs. The France most of us are acquainted with is not like much of England, a country loved of evergreens; yet she, too, has important districts favourable for their development in Touraine and in the west and south. Considering the greater love for gardening among English people, it is noticeable that there is a taste for a greater variety of ornamental trees among the French who take any interest in planting. This is a healthy sign, and there are many rich collections in the nurseries which supply the growing taste for planting. As an example of the riches of some of the collections, one nurseryman showed specimens of 600 shrubs not evergreen, *i.e.*, those that lose their leaves in winter. Although we want careful selections mainly rather than very full collections, it must, nevertheless, be of the greatest importance to a country to possess such rich collections. In them new kinds may be found and tested from time to time to suit various requirements, soils, and tastes. It is in France at the present time that probably the richest collection of trees and shrubs existing has been brought together in the country seat of M. Alphonse Lavallée, President of the Central Horticultural Society of France. This gentlemen, who has taken up the arboricultural question with much spirit and knowledge, has planted in his place at Segrez, Seine-et-Oise, between 5000 and 6000 kinds of trees and shrubs in the open air. As many important new species, and even unnamed species, are already growing in this collection, some of them likely to be of great importance from the point of view of ornament and usefulness, the owner, who has gathered the collection at great cost and labour, is likely to be a benefactor to his country and to the gardens and groves of Europe. The taste for planting rare and ornamental trees was one that long distinguished English gentlemen—perhaps more than any other—and it is greatly to be regretted that any cause should have tended to weaken this taste during the past twenty years. The deciduous trees of northern and temperate countries—those which must ever be the most important in Britain generally have been, beyond the most common kinds, neglected for years. In no country in the world are there such admirable opportunities for the effective planting of trees as in the country seats and parks of the United Kingdom, so large and so varied in surface as to admit of really effective and artistic grouping and massing. Therefore, while it would not be wise to imitate M. Lavallée exactly in his collections, it would be beneficial to the individual and the State if country gentlemen would sometimes, in addition to their general planting, take up say one family of trees and illustrate it in all its forms in their grounds. Thus, for example, one might take Oaks—and we have never seen any park or garden in which the species and varieties of Oaks were illustrated as they deserve—another Maples, another American and European Hawthorns, and so on. No exhibition and no botanic garden has ever yet done justice to the nobler trees, which can, indeed, only be seen in their stately beauty and true character where there is plenty of space around. Few expenditures usually prove more gratifying than those incurred in planting in such positions.

To the trees in the grounds someone has had the happy idea of introducing tall Bamboos from Algeria and Japan to grace the exposed Trocadero, and, though these have scarcely borne the transplantation so well as the inhabitants of northern gardens, with which the place abounds, they, nevertheless, are tall and graceful, and give those who have not seen sub-tropical countries some idea of the elegant forms of the giant Grasses called Bamboos. And it must not be supposed that these Bamboos have no practical interest from our point of view. Those familiar with some of the best gardens in the south of England and Ireland will remember many a graceful tuft or brake of one kind of Bamboo, which, in these mild districts, attains a height of 20 ft. Of recent years, a number of Bamboos from the cooler regions they naturally inhabit have been proved to be quite hardy in the severe climate of Paris, and it is most probable that all these would prove hardy in the south of England, and would add to the many charms of its gardens. In Paris we have the most striking of all experiences of transplanting, whole streets of trees being now moved every year with facility. At the Exhibition thousands of trees grown to a good size for street planting, and even specimen trees, were moved so successfully, that but few died, and the whole kept in admirable health; indeed, few things more remarkable in the planting way have been seen than the extraordinary health of the many thousands of trees, and shrubs, and shrubby climbers which adorned the grounds of the Champ de Mars and Trocadero. We are all so apt to be content with a scarecrow appearance in our shrubberies for a year or so after planting, that it is interesting to note what has been done here; abundance of water has had of course much to do with it. Speaking of shrubberies, the practice in French gardens of frequently placing shrubs singly or in little groups, or colonies on the Grass apart from what might be called the shrubbery, is well worthy of mention, and instances of it were to be seen in the grounds. Shrubberies everywhere are too often the grave of many of the most beautiful shrubs, owing to the common habit of crowding everything together in a mass, and leaving all the finer types either to perish or to be drawn up and dwindled under the shade of the coarser and commoner species. We go to much trouble to keep hothouses for growing exotics into specimens, but few try to secure the natural and fair development of the hundreds of lovely shrubs and low trees hardy in our climate. The practice referred to secures a fair chance to the plant to assume its full size and natural habit. It also, when carried out near shrubberies, fringing them as it were with little groups and colonies, and single adventurers that have grown by themselves away from the mother colony, as it were, destroys effectually the hard, ugly cut margin which is the common "finish" of the greater number of shrubberies. The rude mismanagement of the shrubbery, indeed, is one of the things that must be changed if our gardens are to afford the beauty of which they are capable. The habit of placing all the taller kinds in the centre, and then rounding down the whole gradually to the edge all round so as to secure a pudding-like effect, the planting of quantities of Privet, Laurel, and other common trees and shrubs everywhere as undergrowth, so as to effectually produce a wearisome monotony, and to prevent most people from taking any interest in shrubs or trees at all; the laborious and fearfully destructive practice of lopping in the branches and mutilating the roots of established shrubberies by digging every winter, the results of which may be studied at any time in the extensive shrubberies of the West-end parks; the hard formal margin often surrounded by a formal line of some



Plan of the Garden of the Trocadero Palace.

wretched clipped "bedding plant;" the overcrowding to the death or disfigurement of many species—all these are orthodox practices, but are, nevertheless, wholly wrong, costly, and direful in their effects on our gardens and on the home landscape. The overcrowding and mutilation, which we so often see in our shrubberies, may be seen here in the streets and avenues. The skill of transplanting the trees is remarkable; their after-life such as prevents them ever assuming a natural or fair development. They are crowded so much that an annual mutilation by pruning soon becomes necessary; and as this pruning is apt to interfere with the natural form of the tree, and to make them all too much alike, the result in the end is a needless monotony. This is not only seen in the narrower streets of Paris, but also on the quays or open avenues. Although we have only begun planting quite recently in London, the trees on the Thames Embankment will very soon surpass those in Paris, unless the same system is pursued of leaving all the trees planted to ruin each other. By bold and prompt thinning we shall soon have finer trees in London than in Paris.

The forest department of the Exhibition was very interesting, particularly as represented in a large and handsome wooden structure in the Trocadero grounds. Here the woods that meet the different classes of wants, forest tools and implements, books, herbaria, models, plans, forest animals, birds, plants, and insects were admirably classed and grouped. Unusually interesting were documents, models, and plans concerning the re-wooding of the various mountain districts of France, long bare owing to inconsiderate cutting at one time, and kept so in many cases by the swift action of rains and torrents on the unwooded surface. The great interest shown in this subject in France is, no doubt, owing to the large extent of now bare territory, which, replanted, would add to her resources. If in our case the area that has to be planted is smaller, there is the greater need to make the most of it, and this question of re-wooding the hills is of importance for every country. In France the Government seem quite awake to its importance, and there are numerous young trees in the grounds from the State nurseries, and beautiful and useful herbaria or collections of forest trees, shrubs, and plants made by Government foresters. The appearance of this forest house, and also of the Swedish wooden house nearly opposite to it, in the Trocadero grounds raised the question as to whether the merits of wood for building the walls of houses are sufficiently valued. Ugly and dismal-looking wooden houses no doubt exist, as they do in all materials, but the appearance of several wooden houses in the grounds spoke eloquently of what they are capable in the hands of good designers who understand how to build a house in this way.

No less important than the forest and ornamental trees were the fruit trees, particularly to France, in which the growth of hardy fruit for both home use and exportation has assumed such large proportions. There were whole gardens of well-trained fruit trees at the exhibition, and these, like their fellows of the grove and shrubbery, were in wonderfully good health, and many of them bearing fruit, although, in most cases, only transplanted to the Champ de Mars in the month of April—another proof of what is possible by means of careful transplanting. In England there are not a few who attribute the excellence of France in the culture of hardy fruit to the climate—the fact being that the climate of northern France is an extremely difficult one for the fruit grower, and, on the whole, not a whit better than that of Kent or Sussex. The real cause is a thorough knowledge of fruit trees in all that concerns their increase and training, a most careful selection of kinds likely to be profitable, and—major cause of all—because a great many more fruit trees are planted in France than in England. There is no reason why we should not supply our own markets with the Pears we import from northern France and the Apples we import from the United States. As to the ground required, there is as much wasted by useless trees in hedgerows as would supply all our markets. The small acreage now occupied by orchards in the United Kingdom explains how it is that American Apples now find their way at paying prices to even small towns in Ireland and Scotland. It cannot be said that the rural economy of the country is in a healthy state when immense sums are sent out of it for produce that may be grown quite as well at home. No doubt some who do try find a difficulty in disposing of their produce advantageously, but that is often owing to growing too great a variety of kinds and unsuitable kinds, and it is also sometimes a question of market arrangements, which may in time be altered for the better. The care the Americans and the French take in rejecting all the varieties not really good and profitable in their respective localities is well worth our attention—liable, as we are, to seek many kinds. These, even if they prove good, are often needless, and prevent attention being concentrated on the few that unite all obtainable good qualities. The serious way in which fruit culture is studied by nurserymen in France may be gathered from the fact that one house alone showed young trees of over 800 kinds of Pears, and 492 kinds of Apples. Nobody would probably recommend that even a tithe of these should be grown, but the collection represented a really laudable attempt made to study and describe the merits of all the known varieties which have been considered worthy of names, and which occur in cultivation in various countries. This attempt was made most successfully by the late A. Leroy, of Angers, whose successors have sent so many important collections to the Exhibition. The fruit trees sent by growers in the Paris district and from Troyes were of more importance practically to us, because showing modes of training and varieties likely to be useful in cold districts. Among the modes of training, those in which a few stems ascend vertically and quickly cover a wall or trellis are worthy of adoption with us instead of the old, horizontally-branched tree, which takes so many years to complete, and by which system the walls are usually half bare. Simple and effective means of protecting wall fruit trees in spring by wide, temporary copings are also worthy of general adoption with us to secure regular crops of choice wall fruit.

As to the flower gardening of the Exhibition, it was interesting and extensive to a degree scarcely conceivable—every little structure of the many hundreds in the grounds being garlanded or fringed with flowers in addition to those arranged by the Administration or by the many exhibitors. Quantities of Roses had been planted, and bloomed fairly well, the ground beneath them being often carpeted with Verbenas or other dwarf flowers. This resulted in pleasing mixture and variety, and, better still, covered the naked earth too often seen beneath Roses and other plants in summer, even when the whole earth out of gardens is green. Ribbon borders were numerous and not ugly when relieved by fine-leaved plants, but nearly always made hard towards the edge by having some wretched plant stumped to the ground with the scissors or some other implement to keep it low. Here and there were great masses of one plant in one bed, mostly chocolate-coloured, and forming one flat mass, without light, or shade, or variety, or grace of any kind. The recent "carpet" phase of bedding out was also prettily illustrated, like all other beds set in the freshest Grass. It is one of those passing and not wholly admirable fancies which attract attention as we go slowly forward to attain what is perfectly attainable—all the varied glory of colour without sacrificing light and shade and form, and without geometry.

One of the best lessons the Paris gardens teach is that of the market gardening close round the city; these, however, few attempts had been made to illustrate at the Exhibition. Several little plantations, however, showed the culture of Asparagus, and, without going so far as Argenteuil, the English visitor could see that the French grower has one where we have from ten to thirty plants. It was shown in two of the principal ways it is grown; firstly, in single lines about 4 ft. apart, the roots being about 3 ft. apart in the lines; and, secondly, as isolated tufts among the Fig trees or Vines, the distance in this case being much greater than in the preceding one. The Asparagus culture is worth considering, because immense quantities are imported to the London markets every year. The demand is increasing every year, and our home production is utterly inadequate to meet it. Quantities of Asparagus were sent to the London market during the past spring from remote parts of France, and even from the neighbourhood of Madrid. Asparagus very quickly loses quality if exposed to the air; and it need not be matter for surprise if Asparagus gathered in the Madrid region, sold in the markets there, transported over such a length of railway or sea, and eventually, perhaps, exposed several days in London before it reaches the customer, should be a tough and tasteless commodity. Yet such finds a good market in London and others of our large cities. But it is just as necessary to grow Asparagus abroad for the English markets as it is to grow Hawthorns for our hedges there. There is no reason why the foreign Asparagus should not be driven out of the London market by the home-grown produce. To compete with it, however, in this branch, we must adopt a better method of planting, and cease the expensive method of needless and heavy manuring before planting which has hitherto been the rule. This is found to be quite needless in the cultivation of this vegetable at Argenteuil, where it is grown better than anywhere else. As in connection with this subject the question of green *versus* blanched Asparagus is often raised, it may be pointed out that the question of cultivation has little to do with that of blanching, and that the true mode of culture may be adopted without interfering with anyone's tastes or prejudices in that way.

It is to be regretted that little of the wealth of English nurseries and gardens was to be seen here, so far as outdoor gardening is concerned. This is understood to be owing to some mistakes as to the time of entering—no doubt, arising from the want of any home organisation to look after the interests of exhibitors. Whatever the cause, a mistake was made. No gathering in Europe attracts so many intelligent visitors from its most remote parts as a Paris exhibition; and the like of the now past one cannot be looked for for years to come. Even recently, notwithstanding recent troubles in Russia, a curator of a botanic garden from Tiflis and other remote parts of Russia might have been seen preparing to add to their collections from those shown at the Exhibition and about Paris. English horticulture is rich in specialties; and it would have been for the benefit of the country and of horticulture if these had been shown. In coniferous trees; in evergreen shrubs; in Rhododendrons; in Lilies and hardy bulbs generally; in large collections of ornamental herbaceous plants; in hardy Alpine flowers; in fruit (culture under glass and as adapted to all cold and northern countries); in Orchids; English gardens are far richer and more advanced than any others; and it is in all ways a mistake that this superiority was not shown at the Paris Exhibition.

Among the few things shown from this side may be mentioned the illustration of Mr. Wills's spirited and tasteful way of arranging indoor flowers, and Mr. Lascelles' wooden curvilinear greenhouse. Mr. Lascelles has shown that wooden plant houses may be made in the curvilinear form as well as iron ones. This is an important improvement, as the hideous angularity of ordinary greenhouses makes them far from agreeable objects in the ornamental garden. The handsomest glass houses yet erected in this country are, in whole or in part, of curvilinear iron; and hitherto the free adoption of the curvilinear lines has only been prevented by their being necessarily in iron, to which material many horticulturists have objection. What English horticulturists might have done may be illustrated by Mr. Wills's success at the Versailles Exhibition, where he won fifteen first prizes, the prize of honour, and a valuable Sevrès vase offered to the nurseryman who contributed most to the success of the show.

Bedding Violas.—The past summer—I may certainly write of it now in the past tense—has been one of the best known for a long time for all kinds of bedding Pansies and Violas, the display of bloom having been singularly beautiful. Some of the northern kinds that as a rule do not stand our hot summers well have been very effective, that curiously coloured kind, Queen of Lilacs, particularly so. The very best only of a number have been as follows: Whites, Vestal and Profusion; yellows, Crown Jewel, Yellow Boy, and Sovereign; blues, Blue Beard, Improved Blue Bell, Royal Blue, and Blue King; lilacs, lilacina and rubra lilacina; purples, Mulberry, Cleveden Purple, and Syrian Prince; and of black kinds, Othello. A rich bluish-purple kind, Holyrood, a robust grower, has been very effective, and a pretty little striped kind, named Charmer, has also been very pleasing. A cool moist summer here suits these plants admirably. A hot dry summer suits them in the north. Now the plants are making a very robust growth, and if some of the strongest shoots were cut away the new growth would give an abundant late autumn bloom.—"Gardeners' Magazine."

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FAMILIAR WILD FLOWERS.*

From an educational point of view there is perhaps no worse method of beginning the study of the plant-world than by identifying a few specimens by means of plates. It is too apt to take the place of a thorough examination of the structure of the plant, which should be the first work of the beginner. There will always, however, in all probability, be a large class of people—children, ladies, foreign visitors, and other amateurs—who do not wish to study botany, but merely to know the names of a few conspicuous flowers. For their purpose coloured plates are a desideratum, well drawn and well coloured. The forty coloured plates are by far the most important part of the gaudily-bound but weak-backed volume, the preparation of which Messrs. Cassell have entrusted to Mr. Hulme. Mr. Hulme is, we believe, Art Master at Marlborough, and we think our memory does not deceive us when we say that he has previously published a volume of designs, drawn from flowers, of a semi-"conventionalised" form. This will account for his obvious penchant for full-faced blossoms in the otherwise admirably-drawn series before us. The colouring, however, is little better than that of Miss Pratt's well-known works, the foliage being almost invariably too blue. It would have added much to the value and clearness of the representations if occasional dissections and, perhaps more important still, outline sketches to show the habit of the whole plant, as in many plates in The Garden, or, as in the cases of the Meadow Crane's-bill and the Burdock, an outline of a larger leaf in the background had been introduced. It is perhaps of little consequence that the forty-four plants described are arranged in no order, and an excellent descriptive summary occupying eleven pages has to do double duty as index, but we cannot but regret the meagreness of the 160 pages of letterpress. A good deal about the etymology of names and a few quotations from old writers as to alleged medical virtues are their main features. Several opportunities, such as two Roses, the Apple, the Poppy, and the Cuckoopint, for the suggestion of interesting lines of improving accurate study are neglected. We find no reference to cleistogene flowers under the Violet, to the suppressed peduncle, the axial placenta, or the dimorphic flowers, under the types of the Primulaceæ, to the Potato under Bittersweet, or to insect fertilisation under Orchis. The structure of some of the flowers is briefly alluded to, but we look in vain under Daisy or Corn Marigold for even a warning as to the nature of the "flower," as Mr. Hulme terms the inflorescence of the Compositæ; nor do we get similar information anent the Grasses. Recognising the value of a work on some such plan as the present, we can only express a hope that in the second series there may be more letterpress with more in it, and that the colouring may better represent the powers of modern chromolithography. G. S. Boulger.

11, *Burlington Road, Westbourne Park.*

The Album Van Eeden, published in Haarlem, maintains its position amongst illustrated floral publications, and appeals directly to lovers of hardy bulbous plants. The present number contains six plates of bulbous flowers, natural size and admirably executed. Plate 70 represents Hyacinth King of the Blues and Madame Vander Hoop; plate 80, a group of Tulips, including elegans, retroflexa, cornuta, persica, and the Green Tulip (T. viridiflora); plate 81, double and single Snowdrops, combined with Scilla sibirica; plate 82 does ample justice to one of the finest forms of Lilium davuricum; plate 83 represents Iris persica and the curious Iris tuberosa; plate 84, a group of late Tulips. The letterpress is in Dutch and English.—P. B.

Elaborate Castings.—At a recent meeting of the Metropolitan Board of Works it was stated that the damage done to the railings on the Thames Embankment had amounted, for some time past, to £200 a month, or £1200 a year! The damage is done by boys, who break off the elaborate castings by wholesale. We confess we are not very sorry for the elaborate castings, and trust this case may be a warning to avoid them in such cases in future.

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* "Familiar Wild Flowers." Figured and Described by F. Edward Hulme, F.L.S., F.S.A. First Series. With Coloured Plates. London: Cassell, Petter, & Galpin.

PLATE CLVI.

WINTER-FLOWERING IRISES.

This week our plate represents three charming winter-flowering hardy plants, the value of which, either for indoor or outdoor decoration, can scarcely be over-estimated, for, combined with much beauty, some of them exhale a delightful fragrance, rendering them very welcome additions to other out-door flowering plants at this dull season of the year. Beautiful as the kinds are which we illustrate, they are not so handsome as others in cultivation, but, unfortunately, such kinds are as yet more or less rare. The majority of these winter-flowering Irises belong to the genus Xiphion, a section distinguished chiefly by the existence of a bulbous rootstock. Though all have been generally known under the name of Iris, it is, perhaps, advisable to coincide with the most recent authoritative revision, and it will not materially disturb the existing nomenclature if we note the principal synonyms, though of these some kinds are encumbered with many.

Long-tubed Iris (Xiphion planifolium, of Miller; syn.—Iris alata and I. scorpioides).—This old-fashioned yet beautiful kind, which is represented on the right in our plate, has long been known under the appellation of I. alata, but according to priority of date it must range under the first-mentioned name, as this was applied to it by Miller so long ago as the end of the last century, it having been commented upon in his "Gardeners' Dictionary." It forms tufts of about half-a-dozen rather broad and recurved leaves that are partially developed at the time of flowering, which generally begins in October, and generally a repetition of it at about Christmas time. It inhabits various parts in the vicinity of the shores of the Mediterranean region.

Persian Iris (Xiphion persicum, of Miller; syn.—Iris persica).—This, another old inhabitant of gardens, may be found depicted on the left of our plate. It appears to have been an object of culture for upwards of three and a half centuries, as it was alluded to by Parkinson in 1627. In addition to the showiness of the blooms, it possesses a delicious perfume much resembling that of Violets. Its geographical distribution extends from Asia Minor to Persia, and is found as high as 6000 ft. elevation. This kind, and also the preceding, are admirably adapted for Hyacinth glasses, as previously mentioned. In the open air in warm situations it commences to flower in February.

Netted Iris (Xiphion reticulatum of Klatt; syn.—I. reticulata).—This charming kind is undoubtedly the finest of the whole group. It grows in erect tufts, with leaves four-angled and slightly glaucous, about 1 ft. high at the time of flowering, but they do not attain their full dimensions till May. The flowers slightly overtop the foliage, and are about 3 in. across, with narrow, erect standards of a deep violet-purple colour; the falls are also narrow, a shade lighter in colour, and dotted with bright violet spots, and they have a deep yellow line running through the centre; the flowers are, moreover, very fragrant, which much enhances their beauty. It is a native of the Caucasus, Kurdistan, &c., and is found at considerable elevations in the mountains of Armenia.

The variety Krelagei, of Regel, has flowers of a much duller hue and less fragrant, therefore it is inferior to the type, but this is in some measure compensated by its flowering at least ten days earlier, which is usually about the end of February.

Lebanon Iris (Xiphion Histrio, of Hooker).—This very distinct and showy kind is also one of the rarest, having only been in cultivation a few years. It justly merits the encomiums that have been passed upon it at various times in The Garden. It somewhat resembles the Netted Iris, but is rather taller. The leaves are awl-shaped, quadrangular, and glaucous, developed at the same time as the flowers, which are about 3 in. in diameter, stemless, but with a tube from 2 in. to 4 in. long, of a rich purple colour. The standards are narrow and erect, of a plain lilac colour, the falls broader, of a paler shade, copiously and very conspicuously blotched with deep lilac purple, and with a bright golden crest through the centre. It flowers much earlier than the preceding, generally commencing at the end of January, and, like it, exhales a very sweet perfume. It is a native of Palestine, inhabiting the Lebanon range and Mount Gerizim. It was first sent to Kew in 1873.

Caucasian Iris (Xiphion caucasicum, of Baker).—Though this kind has been an object of culture for many years, it is far from being common, probably on account of its flowers not being very showy. The stems bear from one to three flowers, and from four to five sharply curved and rather broad leaves. The blossoms, which are produced in February and March, are about 2½ in. across, and of a pale yellow colour. It is a native of the Caucasus and North Persia.

Turkestan Iris (Xiphion Kolpakowskyanum, of Regel).—This is a new claimant for public favour from Turkestan, introduced through the instrumentality of Dr. Regel, of St. Petersburg. The flowers, which have been produced in this country, are described as being very beautiful. It has from two to three leaves, lance-shaped, and rather short. The flowers are stemless, with the limb pale lilac, shaded with white. The falls are ovate in shape, tapering to a sharp point at the base; the colour is pure white with bright lilac tips, and keel feathered with purple towards the base. The standards are pale lilac and freckled with white. It appears to flower at about the same time as the Netted Iris, but on this point we cannot speak with certainty. We hear that a goodly importation of this beautiful hardy plant is in the country, and we hope ere long that it will be as common as its congeners.

Long-styled Iris (I. unguicularis, of Poiret; syn.—I. stylosa)—This handsome kind, which occupies the central position in our plate, is a member of the group of true Irises, and is one of the beardless section, but few surpass it in beauty, and, on account of its early period of flowering, viz., the beginning of the year, it should be an indispensable plant to every collection, large or small. One detractive point is that the flowers are stalkless, and nestle amongst the foliage, but they are admirably adapted for cutting, in which state they last good for some time, and even buds expand very freely in water. It is a native of Algeria, and was introduced about thirty years ago.

As regards culture, when grown in open borders these Irises should have a warm and sheltered situation, say under a south wall, and they will be found to succeed in any ordinary garden soil, provided it be not too stiff. It is advisable to place a thin layer of Cocoa-nut fibre refuse or some similar material to serve the purpose of protection during severe weather, and to prevent the flowers from being bespattered by mud during heavy rain. Some kinds produce seeds very freely in some seasons; these should be carefully collected, and, when well ripened, should be sown at once; and this will be found to be a wholesale mode of increasing the stock, as they will make strong flowering bulbs in about three years. Several of them, and especially the Netted Iris, are perfectly amenable to slight forcing, and by this mode their beautiful blossoms may be obtained several weeks earlier than their natural time. For this purpose good flowering bulbs should be taken up and potted in September or October, putting about five in a 6-in. pot, and kept in a cold frame till about the end of November, when they may be removed to a slightly warm house or frame. Another mode is to grow them with the bulbs placed in glasses of water, after the manner of Hyacinths. Of course, under such treatment they do not acquire such vigour as when grown in the open air, but they are very suitable in this state for enlivening living rooms, &c., a mode of culture in practice since the time of Miller, at the end of the last century. W.

[The plants from which our plate was prepared were furnished by Mr. Ware and by Mr. P. Barr.]

The Woolly-leaved Inula (I. candida).—Though not possessing very showy flowers, this is a distinct and handsome plant. It grows to about 1 ft. high, and has rather large, short-stalked, ovate leaves, which are covered with a dense white down. The flower heads, which are yellow, are borne on the ends of the branches, and they are also produced from the axils of the leaves about midsummer. It is a native of Candia, and was first introduced in 1714.—W.

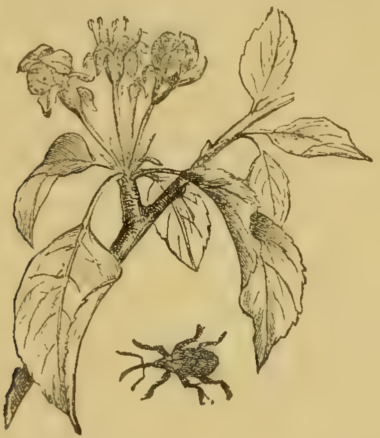
The Celtic Valerian (Valeriana celtica).—This is an old-fashioned garden plant, having been cultivated so long ago as 1748. It should be included in the Alpine class, as it grows only 3 in. to 6 in. in height. It has a creeping rhizome, producing small tufts of root leaves somewhat oval and tapering in shape. The stems, which are slender, bear a few scattered small leaves and terminal loose racemes of flowers, which are very numerous but small, of a reddish tinge on the outside and white within. Besides its prettiness it is interesting on account of the aromatic odour of the long, fibrous, black roots. In a wild state it has a wide range of distribution, being found on the Alps from France to Italy.—W.

GARDEN DESTROYERS.

THE APPLE WEEVIL.

(ANTHONOMUS POMORUM.)

There are, perhaps, few insects which are more destructive to the Apple crop than this little weevil, which, unfortunately, is far from uncommon in this country. Its ravages are no doubt frequently attributed to that much-talked about and maligned combination of circumstances generally known as the weather, for, when the Apple blossoms suddenly wither or die without any apparent reason, it is always said to be a cold wind or frost which has done the mischief; whereas, it will often be found that these blossoms contain the grub or chrysalis of this weevil. As the grub requires a shelter from the sun and rain if the blossoms open fully before the eggs hatch, the grub will not live, so that in fine, mild weather, when the blossoms open quickly and together, the ravages of this insect are not much felt; moreover, the weevils have not so much time in which to lay their eggs. In cold, wet weather, however, the buds which have begun to swell are frequently retarded and prevented from opening for several days, which gives the insects plenty of time to lay their eggs and for the latter to hatch. Kollar mentions, "that in 1816 the blossom buds were attacked by these insects for nearly three weeks, owing to the cold and rain having checked the flow of sap, and that scarcely a bloom was to be found that was not pierced. No wonder that there was no Apple crop that year!" The beetles leave their winter quarters, which are generally under stones and leaves or the loose bark of the trees. In the spring after pairing the female searches for such Apple buds as are beginning to swell. She seems to be very particular in her choice, often carefully examining several before she can find one to suit her. When one is selected, she bores a hole into the centre of it with her long beak or nose, at the bottom of which she forms a kind of chamber, and then deposits an egg in the hole, which she pushes down with her beak. The entire operation of laying the egg and boring the hole is said to occupy three-quarters of an hour. She then seeks another suitable bud, for she never lays two eggs in one hole, or bores two holes in the same bud. It is not known how many eggs a weevil lays, but the number must be considerable, as so few of the insects are found compared with the number of blossoms destroyed. The grubs are hatched in the course of five or six days, and at once begin to feed on the pistils, stamens, and ovaries; the buds, however, continue to swell and the petals to open. When almost expanded the growth suddenly ceases, and the petals wither, shrivel, and form a kind of covering to the now almost empty bud, in which the grub or chrysalis may be found. The former attain their full size in about a fortnight, and then assume the chrysalis state, from which the perfect insect emerges in about a week. The transformations are completed very rapidly, only about a month elapsing from the laying of the eggs to the appearance of the beetle, which feeds on the leaves of the trees during the summer, when it is seldom to be seen. In the autumn they leave the trees and find more sheltered places in which to pass the winter. As may be imagined, there is not much to be done to destroy these insects on large trees; the boughs may be well shaken, when many of the beetles will fall off, and, though they will reascend, it will take them some time to do so. From dwarf trees and espaliers they may be picked off, and as they usually crawl, and do not fly, this can be done without difficulty. Any flowers which have been attacked should be at once gathered and destroyed, as in this way their numbers the next season will be much lessened. Any stones, leaves, or rubbish which happen to be near the trees should be removed in the autumn, and any leaves, bark, or Moss scraped off the trees, for in such situations the weevils pass the winter. This species occasionally attacks the blossoms of Pear trees, but it usually confines its attentions to Apple trees. The beetle is from 1-8th to 2-10th of an inch in length, and is of a dark brown colour, covered with a greyish down; the wing-cases are somewhat reddish, with two oblique black bands towards the apex, the space between which is whitish. The head is produced into a long, slender, curved proboscis or beak; in the middle of which are the antennæ, which are 12-jointed, those towards the point forming quite an angle with the basal ones. The grubs are nearly white, with black heads; they are very small, fleshy, and have no legs; they are, however, provided with two rows of retractile, fleshy tubercles instead. The chrysalis, as is usual with beetles, is not complete, the limbs of the future insect being visible through the covering membrane. S. G. S.

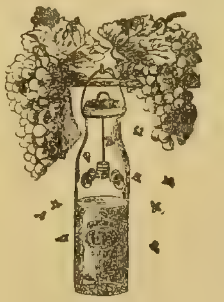


The Apple Weevil (Anthonomus pomorum).

THE PELLETIER WASP TRAP.

One of the most seductive traps for the wasp is that invented by M. Pelletier, and a glance at the accompanying illustration will show that in simplicity it rivals any of the wasp and fly-ensnaring devices which from time to time have been described in The Garden. Although the illustration almost "tells its own tale," it may be as well to mention that the trap consists of a broad-necked, corked bottle having a number of holes all round it, cut in such a way that the wasp can easily enter, but with the greatest difficulty escape by them. Immediately opposite these funnel-shaped apertures there is suspended in the middle of the bottle a small brass vessel containing honey or some other material serving as bait. Attracted by its scent, the wasps attempt to get at it, but as the trap is completely closed above, and has only diminutive perforations elsewhere, these efforts prove fruitless, and after a while the insects fall exhausted into the water occupying the lower half of the bottle and are drowned. When honey is the bait employed, and a proper amount has been put into the suspended vessel, it rarely happens that a second supply is needed during the same season. All that is necessary in most cases is to stir the honey about from time to time, and thus cause it to emit a stronger smell. As to the water in the bottle, this will now and then require renewing. There are many ways in which the Pelletier trap can be used; whilst it is, of course, mainly intended for garden and orchard use, attached to walls, trellises, or espaliers, on which any kind of fruit is trained, it has also been successfully employed indoors as a fly-catcher, a small lamp or lantern being substituted for the honey vessel at night, so as to make it continuously operative.

T. S.



Pelletier Wasp Trap.

Pelargonium Comte de Morny.—This, although an old kind, is one of the best of zonals for small beds, inasmuch as it is of a close, compact habit and very floriferous. The colour, too, is peculiarly soft and pleasing, and serves to tone down the more brilliant kinds. For pot culture it is very suitable, more especially for late autumn decoration.—J. Cornhill.

GARDENING FOR THE WEEK.

Orchids.

Anæctochili.—These most exquisitely beautiful of all handsome-leaved plants have baffled more cultivators who have attempted their growth than perhaps any plants in cultivation. The insignificance of their blooms is such as to render these of no value or importance; consequently, they are very rarely treated in the way that other Orchids are which are grown for their flowers, and it is often the aim of the cultivator to increase them as fast as he can by keeping them on growing more or less, or with only a very short period of comparative rest. From my own failures, as well as success, in the cultivation of these plants, added to what I have observed with many other growers, I have arrived at the conclusion that the want of sufficient rest produces the weakened condition that tends to their destruction. Wherever they have continued to do well for any considerable number of years, I have invariably noticed that it was in cases where they were subjected to a much longer rest than they usually receive—sometimes, through the inability of the growers to give them, during the winter, as much warmth as they would have done had they been able to choose in the matter, or that the countries they come from, especially all the golden-veined varieties, would lead us to suppose that they absolutely require. From my own experience, I am led to the conclusion that there is no safe means of resting them, but by a diminution of the temperature that will stop growth, for it must be borne in mind that they are not epiphytal to the extent that the majority of other Orchids are; growing as they do naturally upon the earth, or a very little elevated above it, they cannot be expected to bear drying at the roots, as many species will, and I have always found when the material in which they are placed gets quite dry the partially-developed roots never extend freely afterwards. My impression is, that if for the next three months they are kept with a night temperature of 50° to 55°, that it is much more conducive to their continued healthy condition than if warmer; at the same time, the material in which they are grown should be kept slightly moist, but, as a matter of course, not nearly so much so as in the growing season, and a little air should be admitted for a time every day by tilting the bell-glasses and giving them a tolerably light position. Those who have been used to keep them much warmer than this may find a difficulty in mustering courage enough to keep them so cool, but their unsurpassing beauty is such that they are worth any amount of attention on the part of those who are fortunate enough to have a representative collection, and it is quite clear from the numbers who have grown them well for a time, and at whose hands, without any change of treatment, they have become diseased and died right out, that the comparatively hot treatment to which they are often subjected all the year round, however it may stimulate growth and size for a time, ultimately induces a weakened condition, such as leads to their destruction.

Brassias.—These are not near so fashionable, or find favour with so many growers, as the numerous plants possessing more showy colours; but there are several of them that are worth growing, especially where large spikes of flowers of an enduring nature are required for cutting. As a matter of course, they last still longer on the plant. A good many of them are from the West Indian Islands, and, like most other Orchids from these parts, succeed much better with more air and a drier atmosphere during the growing season than the majority of Orchids are subjected to, without which, as well as more light than many species will bear, they do not flower so freely as they are capable of; they also bear being kept very dry at the roots for a considerable period through the winter. In most cases their season's growth will now be quite finished, and they should be allowed to get quite dry, requiring little or no water for the next three months.

Cyrtopodiums.—These belong to a select family, with only a few representatives, found both in the West Indies and tropical America, not nearly so much grown as they deserve to be; but their absence from the houses of those who cultivate general collections may be accounted for from their usual disinclination to flower, unless, like the last-named plants, the Brassias, but to even a greater extent, they are treated through their season of growth to a large amount of air and light, which is synonymous with a drier condition of the atmosphere than is often kept up in Orchid houses. Yet the immense spikes of flower which they produce, equalled in size by no other Orchids that I at present recollect, their general attractive character and the very long time they keep fresh, render them worthy of more general cultivation. Where grown, their growths will mostly be about completion, at which time they should be gradually dried off, for if the soil were kept moist for even a short time after the current growth was finished, with me they always started into second growth, which seriously diminishes the chance of their flowering. C. punctatum and C. Andersoni are both handsome species.

Cattleyas.—Where a considerable number of these are grown and have a house to themselves, most of the species will now be about finishing their growth; the spring-flowering kinds will now require being subjected to dry treatment at the roots, continued longer or shorter proportionate with the time they are wanted to come into flower; if kept moist, even in a comparatively low temperature, the growth buds at the base of the current season's pseudo-bulbs will show a disposition to start; too much moisture at the roots with the majority of these plants is most injurious to them; as they are much more impatient of the material in which the roots are placed holding anything but a very slight amount of water through the winter than most Orchids, any approach to a wet state will cause their wholesale destruction. If the plants have been grown under conditions of sufficient light and not too much moisture in the atmosphere, or, at the root, it may be presumed that they will have plenty of roots, in which case they will bear for a considerable time an all but dry state of the soil without shrivelling to do any harm. It is only the soft, spongy-grown examples of these plants inadequately furnished with roots that are disposed to shrivel when subjected to the necessary dry treatment during the winter. The charming C. labiata will either now be in flower, or approaching that state; it is not well to submit this plant to too low a temperature whilst in bloom, or after the flowering is over, as, when so treated its thick, fleshy bloom-stems often have a tendency to rot down and destroy the leaves and bulbs which have produced them. Of C. crispa there are several beautiful forms that are well worth cultivation, although with many it is not a favourite, on account of the character it gets as being a shy bloomer; but, like many other plants this is simply attributable to its often not being treated as it requires; if grown too hot and moist, with little air and heavily shaded, it will not flower freely. Many plants of it will yet be far from having completed their growth, but the warmest end of the Cattleya house where a night temperature of about 50° is kept up will be quite hot enough for them. They should, until growth is completed, receive just so much water as will keep the material in which the roots are in a slightly moist condition, but considerably drier than during the summer season, by which means many of the old roots will retain their vitality. Much of the strength and vigour possessed by these plants, as in most other Orchids, is very much dependent upon the length of time their roots live, although, according to the nature of Orchids, a portion decays annually.

Lælias.—L. purpurata, and any others that make their growth similarly through the winter, should, if possible, be moved from the Cattleya house and set amongst the East Indian species or in any structure where a temperature some degrees higher than the Cattleya house will be kept up, otherwise it is almost impossible to induce these Lælias and like plants to make full-sized growths. Where such convenience does not exist, they ought to be placed at the warmest end of the Cattleya house, and means taken, by giving all the air admitted at the opposite end, to effect as much disparity as possible in temperature between the plants that have completed their growth and those that are progressing. L. anceps and L. autumnalis now in flower, or coming on, should be kept in an atmosphere sufficiently dry to preserve the flowers from spotting without approaching that moistureless, parched condition that Orchids in bloom are frequently subjected to, under an impression that it preserves the flowers longer, but which, in reality, is not the case, as they at all times require more moisture present in the air that surrounds them than the majority of other plants. The fine old L. Perrini, as soon as it goes out of flower, should be allowed to become quite dry at the roots, and kept in such condition until the time arrives for starting it into growth in spring.—T. Baines.

Indoor Plant Department.

Stoves.—The average minimum temperature of the stove at this season should range about 60°, though, generally, the warmest part of it is a few degrees higher. Ventilation should be given at the top on fine days, cold currents being always avoided, and the sashes should be closed early in the afternoon. All evergreen plants should be kept moderately moist, but, if anything, a little on the side of dryness; keep deciduous ones rather dry, and the syringe should now be scarcely or ever used. Caladiums, Achimenes, Gloxinias, some Alocasias, Kæmpferias, Gloriosa Planti, and some others, must be kept dry in their pots till spring, when they should be re-potted and started in a little bottom-heat. The varieties of Epiphyllum truncatum and Russellianum are now in full beauty, and may be transferred to the coolest part of the stove. Aphelandra Roezli is now also one of the gayest of stove plants, and requires plenty of water. The earliest of the Poinsettias will by this time have developed their brilliant floral leaves, and must be kept in a warm place and have plenty of water, otherwise they are apt to lose their foliage. Keep succession plants in brisk heat, also those of Euphorbia jacquiniæflora, the flower buds of which are now set. Asystasia capensis and Torenia asiatica make fine winter-blooming plants for baskets, and require no care beyond dipping them occasionally in Tobacco water, as the Torenia, especially, is rather subject to green fly. Amongst other plants now in flower in stoves are Strelitzias, the yellow Justicia calycotricha, the drooping Thyrsacanthus Schomburghianus, the white Cestrum diurnum, Medinilla farinifera, the old-fashioned blue Eranthemum pulchellum, the beautiful white Pancratium caribæum, Eucharis amazonica, Begonias, Poinsettias, Melastoma malabathrica, Pitcairnia odorata, Bilbergia splendens, Rondeletia speciosa, Euphorbia Bojeri and splendens, Mussænda frondosa and luteola, and many others. If Ixoras have broken well they may now be potted without disturbing the roots further than removing a few inches of the surface soil, and use pots 3 in. larger than those they previously occupied, and only good peat and silver sand as a compost. Dipladenias, too, if they have broken well should be repotted, but in their case the old soil should be shaken well away from the roots without hurting the latter, and they should be repotted in good open peat and plenty of sand. Both Ixoras and Dipladenias should be kept rather dry after this shift. Keep Allamandas, climbing Clerodendrons, and Bougainvilleas quite dry at the root; winter them in a temperature of from 50° to 55°, and neither cut nor prune them. Plunge well-rested plants of Eucharis amazonica in a brisk bottom-heat, in order to induce them to flower. Pot young plants of Cyperus alternifolius for decorative purposes next year, using a rich soil and give them plenty of water.

Ferns and Lycopods.—Ferns should now be in a state of rest, which is better secured by a low temperature than by absolute dryness. A temperature of from 55° to 60° minimum is sufficient for stove varieties, while mere exclusion of frost will suit greenhouse ones. Such as are producing young fronds should be kept at the warmest end of the house, and should at no time lack water. Tree Ferns, too, should always have a good supply, for the surface-soil about them frequently presents a moist appearance when beneath it is injuriously dry. Cut away only such fronds as are quite dead. Hardy Ferns grown in pots should be placed in frames, on back stages in greenhouses, or plunged out-of-doors where water cannot lodge about them. Now is an excellent time to clean such plants of thrips and scale; when they have been thoroughly freed from these pests, the young growths come up vigorously, and have a much better chance of development than when old fronds, infested with insects, are present. Fumigating Ferneries, too, may now be beneficially practised, even oftener than in summer, inasmuch as the fronds in winter are harder and better ripened than in summer, and, consequently, less liable to injury. A good stock of young Ferns should be kept in a brisk, moist temperature for supplying cut fronds for furnishing purposes, and for filling ornamental baskets. Where spores have germinated, and have made a little progress, they should be pricked off in small patches at first, and afterwards, when a few fronds have been formed, the plants may be potted separately. Club Mosses also form good decorative subjects, the small kinds, like Selaginella denticulata, Kraussiana, and delicatissima being available for edgings, and the larger ones, like the varieties of formosa, Africana, inequalifolia, and others, make good substitutes for Ferns when kept growing, but when cut they soon fade. They may likewise be kept growing all through the winter, for as they grow so quickly, and can be propagated so readily, there is no necessity for resting them. Although they like plenty of water, even in winter, stagnant moisture is injurious to them.

Roman and other Hyacinths.—Where the beautiful small-flowered Roman Hyacinths are grown in considerable quantities, a second lot should now be placed in warmth to bring them into bloom. Where a good supply of flowers is required from the present time up to the close of the year these small free-blooming bulbs are invaluable, their natural early-flowering habit enabling us to have them without much forcing; when put in heat, the temperature should not be kept too high, a common practice, but, nevertheless, a mistake, as it draws the spikes up weakly, a circumstance which not only injures their appearance, but renders the flowers incapable of lasting nearly so long; a temperature of 55° at night, and 10° higher in the daytime, is sufficient. If a continuous supply of large-flowered Hyacinths, Tulips, and Narcissi are required until late in the spring, the latest roots should at once be potted; it is not well to defer this longer, as the bulbs are beginning to grow, and should not be longer kept out of the soil; when potted, treat them as advised for those put in earlier, *i.e.*, place them in a bed of coal-ashes, a few inches in thickness, filling up between the pots, and covering all over 5 in. or 6 in. in depth with the same material; they will succeed in the open air, or in a cold frame should such be at liberty; and in the latter they can be easily protected from frost.

Pelargoniums.—Show varieties of Pelargoniums, as well as fancies, that were cut back after blooming, shaken out, partially disrooted, and placed in smaller pots, will now require moving into others a little larger, in which they are intended to flower. The size of the pots should be determined by the strength of the plant and the purpose for which they are required. Eight-inch pots are sufficient for the largest specimens. If wanted, Pelargoniums may be grown 5 ft. in diameter in pots of the size just named; for ordinary decorative purposes 7-in. pots will be large enough. Grow them in good loam, enriched with about one-fifth of well-rotted manure; to which add a moderate quantity of sand. In potting, ram the soil tolerably hard; if it be left loose the plants form comparatively few roots, and run a great deal into leaf, instead of flower, in the spring. Water them sparingly through the winter, never giving it until the soil has become almost dry; and then in sufficient quantity for it to make its appearance through the bottom of the pots. Keep the shoots well tied out, and the plants in the lightest situation available, elevated close to the roof glass, with a night temperature of from 40° to 45°.

Flower Garden.

The rainfall during the greater part of the present month has been greatly in excess of the average, and, on heavy land, the soil is still in a very wet condition. In all cases, however, where it is not too much so, and while the weather continues open, planting operations may still be proceeded with. In planting ornamental trees of all kinds it is necessary to take into consideration the habit of growth, and the form or outline which the various specimens are likely to assume when they arrive at a partially or a fully-developed condition, in order that they may be so arranged as to suit the positions they are intended to occupy. Many instances may be found in which such trees as the Cedar of Lebanon have been planted so near to the mansion or dwelling house as to have the effect of completely dwarfing the building. Similar mistakes are also being made in reference to the Wellingtonia and the Douglas Fir. Trees which are likely to attain an altitude of, say, 50 ft. or 60 ft. in the course of twenty or thirty years should not be planted nearer to a residence than 100 ft. or 150 ft.; therefore, wherever grounds are circumscribed in extent trees of smaller growth should be used. Amongst the many ornamental plants which do not attain gigantic proportions may be recommended the Cupressus Lawsoniana, Cryptomeria elegans, Libocedrus decurrens, Thujopsis borealis, Thuja Lobbi, Thuja elegantissima, golden-striped Yews, variegated Hollies, &c.; and even Picea nobilis, P. lasiocarpa, and P. Pinsapo, together with Pinus insignis and Cembra, all of which seldom attain great dimensions. Among meritorious varieties of deciduous species the beautiful Taxodium distichum should not be overlooked. The Acer Negundo variegatum, the Tulip tree, Rose Acacia, the Cornelian Cherry, the Maiden-hair tree, and the various varieties of Cratægus, such as the double and the single-flowering scarlet and pink Thorns, are all well deserving of attention.

Bulbous Plants.—In far the greater number of gardens many more bulbous plants than are usually seen might, with advantage, be grown. Their distinct forms and pretty colours are an interesting and pleasing feature during the spring months. Nothing, in their way, can be more beautiful than the varieties of Erythronium (Dog's-tooth Violets); those who intend growing these should procure E. giganteum or grandiflorum, a fine red variety; E. album majus, a very large-flowered pure white, much superior to the old white variety; E. americanum lanceolatum, yellow, a very distinct and desirable kind; E. atro-roseum, a deep rose-coloured kind; E. purpureum majus, with large mauve-purple flowers; E. giganteum album, splendid white, bearing eight or ten flowers on a stalk; E. giganteum flavum, fine golden-yellow. Either grown together in a bed or in good-sized patches, at the front of the herbaceous border, these plants have a charming effect, not alone for the beauty of their flowers, but their handsome mottled leaves are very attractive; they should be planted without delay. Hardy kinds of Ranunculus, such as the Turban varieties, may now be planted in situations where the soil is dry; but the more valuable sorts should not, except in very favourable positions, be planted yet, as they are apt to suffer from wet by lying too long in the ground. Where a succession of handsome hardy flowers is held in estimation, single Anemones should be largely grown, the plants, from their compact habit and the continuous brilliant-coloured blooms which they produce being almost without a rival; the single scarlet variety is most effective, commencing to flower in a mild season during the first month in the year. Anemones like a moderately rich, free soil, and if grown in clumps in the herbaceous border should occupy a front position on account of their dwarf habit of growth. A very pleasing effect may be produced in spring by planting large masses of Snowdrops, Crocuses, and Daffodils in the Grass in distant parts of lawns, in Grass plots in out-of-the-way corners, or in front of shrubbery borders, and under trees. These may be either planted in patches or dispersed 6 in. or 8 in. apart over the available ground. The places chosen for plants of this kind should not be in too close proximity to the dwelling, as the tops ought not to be removed in the spring until after they are dead, which, in a very prominent position, would be unsightly. Where any of the above plants are to be so arranged they should be planted immediately. Crocuses and Snowdrops may be put in by making holes with an ordinary dibber, covering the bulbs with a little loose soil; for Daffodils, holes must be made with a spade, but whichever way the planting is effected it can with ordinary care be done even on Grass without having an unsightly appearance.

Indoor Fruit Department.

Vines.—When the earliest-started pot Vines produce young leaves do not increase the bottom-heat in which they are placed, but raise the day air temperature to 65°, and at night it should be 58° or 60° when the weather outside is mild. As soon as the shoots are 2 in. long the canes should be suspended nearer the roof than they have been during the time when they have been breaking. Admit a little air on all fine days, and on all such occasions the Vines may be well syringed when the ventilators are finally closed. If the pots are placed near hot-water pipes the soil in them will become quickly dry when strong firing has to be resorted to, and they should be looked over daily and well supplied with clean water whenever indications of drought show themselves. During cold nights, when much fire heat is used, the pathways and other surfaces should be kept moist to prevent dry air from injuring the tender shoots. A second batch of pot Vines may be got in readiness to place in heat about the 1st of next month; clean and surface-dress them as was directed in the case of the others. The different varieties of Black Hamburghs, which include the Frankenthal, Dutch, Mill Hill, and Victoria kinds, are those which still give most satisfaction as early black kinds, and Royal Muscadine, Foster's Seedling, and Buckland's Sweetwater among white varieties. Later varieties take longer to gain maturity than those just mentioned.

Pines ripening too quickly for consumption, or requiring to be kept for any special purpose after they are ripe, may be kept in very excellent condition for a month or six weeks, say in a room in which there is a temperature of about 40°. Both plant and fruit should be thus circumstanced, unless where any valuable suckers are attached, and are likely to be sacrificed. In this case the fruit may be cut and hung up crown downwards in the same room, but, under all circumstances, it is best to cut the fruit, and remove the plant and fruit before they are quite ripe. Watering must now be done with great care; feel each ball with the hand to ascertain if it really needs water. Look over Queens that are resting, and, unless they are next to being dust-dry, do not give them any water. When a very fine day occurs, airing Pineries should receive attention, just the reverse of that recommended for early Vineries. The front ventilators should in this case be opened. This mode has the very desirable influence of preventing the plants and crowns from becoming overdrawn.

Peaches and Nectarines.—If the pinching and thinning of Peach trees has been well followed up throughout the summer months, little pruning will be necessary now; still, where not done, the usual winter pruning will require attention, except in the latest houses, in which the foliage is not yet down. Ordinary fan-training is that which is most practised, and also that by which a tree is best kept in health. Severe cutting of Peach trees, especially strong branches, should be avoided as much as possible; but, if the wood in a tree has been allowed to get too thick, which is a common fault, instead of nibbling away at the smaller twigs, branches of the older wood should be cut out, always having an eye to bringing up a succession of young wood from the bottom. In young vigorous trees care must be taken to preserve well-ripened twigs covered with buds, cutting out the green soft branches, if thinning is necessary; but they must be retained if filling up is required. Some varieties, such as Rivers' Orange Nectarine and the Pine-apple Nectarine, are of a more dense and twiggy growth; and some, as the Noblesse Peach, are more given to lengthy growth than others; consequently, more caution is required with the latter. In tying the trees see that every shoot has room to extend itself when growth shall have commenced, else there will be confusion and overcrowding in spring. Never shorten the bearing wood of a Peach tree. In late houses the foliage will be falling fast; keep all dry, and husband sun-heat; the foliage will fall while quite green through sheer lowness of temperature and damp. I like to see Peach leaves ripen yellow, like other foliage. The wood of dwarf trees in pots, or planted out, will want thinning and tying down in order to bring the trees into shape. Some sorts yield to this treatment well, others are more stubborn. Pendulous-growing sorts make handsome trees managed in this fashion; and, with fruit hanging down to the ground, they have a fine appearance.

Pits and Frames.—See that the occupants of cold pits and frames receive plenty of air when the weather is not frosty; the object now is to restrict growth as much as possible, as the less progress the occupants of such structures make the hardier they will be. This not only applies to plants in pots, but also to subjects like young Lettuces and Cauliflowers. Either in frames or under hand-glasses or cloches, inattention to this matter of giving air is frequently the cause of these plants dying outright, or suffering seriously when long-continued frosts occur.

Kitchen Garden.

Globe Artichokes should now be protected; if these, after the heads have been used, had the old stems cut away, the young growth at the bottom will be in a robust state, capable of enduring even the most severe winter with a little protection. The best and only material they require is about 1 ft. of dry litter placed lightly round the young shoots, but not over them, leaving the largest leaves just above the litter; round this place 9 in. of soil two-thirds as high up as the litter in the form of a slight Celery ridge, but not drawn up so close. So managed, I have never had this vegetable injured in the least, even in damp, heavy soil. In planting Artichokes the rows should always be so far apart—5 ft. is not too much—as to admit of the soil required for this protection being taken from between them, without going so deep as to leave the roots insufficiently covered. Where the rows are near together, it will be necessary to bring the soil from elsewhere. In this case, coal-ashes, if at hand, will answer the purpose in every way.

Peas.—Those who reside in the southern or western parts of the kingdom, or in any favourable locality, not far from the coast, where severe and protracted frost is not usual, and where, in addition, the soil is of a light nature, may now sow a few early Peas for the chance of having some a little more forward in the season than by later sowing. Choose a situation sheltered from the north and east winds, with the ground, if possible, sloping to the south. Dig it well, and mark out the rows 4 ft. apart; in opening the ground for sowing, do not go above 2 in. in depth, for, if the Peas are put in deep at this season, they are liable to rot. Sow considerably thicker than would be required in the spring to make up for such as may not vegetate, or that suffer from the attacks of slugs; cover with the soil in the usual way, and over the top put a couple of inches of fine coal ashes. This will not only act as a protection from frost, but also prevent slugs from penetrating the ground and devouring the young sprouts as they are pushing up through the soil. On ground that is much infested with slugs there is great difficulty in keeping these early-sown Peas from being eaten, and if, in addition, the soil is of a wet retentive nature, it is better to defer sowing until after the commencement of the new year.

Extracts from my Diary.

December 2.—Putting a batch of Keen's Seedling Strawberries on shelves in early Peach house. Cutting down old fruit trees, grubbing up their roots, and trenching the ground ready for large specimens. Washing Vinery lights ready for painting. Finishing pruning and nailing Plums and Cherries on north walls.

Dec. 3.—Cutting all Grapes in the Mrs. Pince house, and putting their stems in bottles of water in the Grape room. Giving early Peach house a good watering. Covering up a small piece of Parsnips to save them from frost. Moving large shrubs from nursery to pleasure grounds.

Dec. 4.—Looking over all seed Potatoes and removing any that are going bad. Tying mats ready for protecting. Making labels and pegs. Cutting shreds and pointing nails. Sorting Peas. Cleaning seeds. Looking over Onion store, and removing any that are bad.

Dec. 5.—Sowing Mustard and Cress. Putting a few more Hyacinths into gentle heat to get them forward. Commencing pruning and nailing Pears on east and west walls. Root-pruning Apple and Pear trees growing too grossly. Getting manure on to land whilst the weather is favourable.

Dec. 6.—Putting in 100 pots of French Beans. Making a new Mushroom bed. Clearing up flower borders, forking them up, and planting them with bulbs and spring flowers. Pruning Gooseberry and Currant bushes. Turning up together leaves and long manure for hotbeds. Deep trenching as fast as the weather will permit. Looking over all the Pines, and giving them a little water where required.

Dec. 7.—Looking over Grapes in bottles, taking out any bad berries, and filling up the bottles with water. Looking over fruit room and removing all fruit that is beginning to decay. Fruit in use for dessert: Pines, Grapes, Pears, Apples, Medlars, and Nuts.—W. G. P., *Dorset.*

ROSES.

ROOT AND SHIELD GRAFTING.

(Continued from page 448.)

Root-grafting.—This is a system which deserves to be more extensively practised (see figs. 20, 21, 22). It ought to be of great service to Rose growers, especially as regards kinds susceptible to the effects of frost, such as Tea, Bourbon, and Bengal Roses, as well as certain Bourbon Hybrids. It is a well-known fact that Rose trees are killed by frost. When grown on free stocks they sometimes spring up again, but when grafted on a Brier stock the latter alone survives, not, however, in all cases. The varieties best for the purpose are the Hybrid Perpetual, Manetti, and Cabbage Roses. Root-grafting may be performed in both spring and autumn, but autumn grafts have the best chance of success. The roots are cut into lengths from $2\frac{3}{4}$ in. to $3\frac{1}{4}$ in. long, taking care to preserve the rootlets intact; the slips should be from 1-5th to 4-5ths of an inch in diameter; the smaller ones are cleft-grafted or tongue-grafted. The scions to be grafted should have two eyes; they are cut slantwise for the length of 4-5ths of an inch, the slant commencing at 1-5th of an inch over the lower eye. The graft is pushed into the slit in the root, so that the eye is a little below the part where it is cut off. The bark of the graft and scion are brought into contact, and the junction is tied and waxed in the usual way. The eye is introduced into the root in order that it may draw up the sap and favour the striking and future development of the graft. The grafted roots are placed in a frame upon a layer of 9 in. of dry stable manure and garden soil mixed in equal parts. This compost ought to be prepared at least a week before it is required for use. A small trench of about 5 in. in depth is opened up all along the upper portion of the bed of the frame, and the grafts placed in it at a distance of $1\frac{1}{2}$ in. from each other, and in a slanting position. The first trench being filled, a second is opened at about $2\frac{1}{2}$ in. below it, the second being filled up with the soil taken out of the first, and so on until the whole of the frame is full. An ordinary frame will hold twenty rows of grafts, each containing fifty plants, that is to say, 1000 in all in a very small space. The sash is then put on, and if we are grafting in spring it is covered over with a straw mat; if in the autumn, with dry leaves. Watering must be moderate, and should only be given when the soil is very dry. The amount of water given should be increased as the shoots on the grafts grow stronger. The grafts may pass the winter in the frame if we are careful to heap up around it a mass of equal parts of stable manure and well-dried dead leaves. We may also place the grafts in the propagating house, putting them first under bell-glasses and keeping them at a temperature of from 50° to 58°; later on, when they are properly united, they must be removed to larger pots and placed in a cool house. Whatever may have been the plan on which we have kept them, we may transplant them into the open ground as soon as hard frosts are no longer to be feared. Root-grafting has the advantage of being capable of being performed under cover on days when the weather prevents us from doing anything in the open air. It also does not need a store of stocks, besides which it yields plants which, when once placed in a permanent position, very soon become fine bushes.

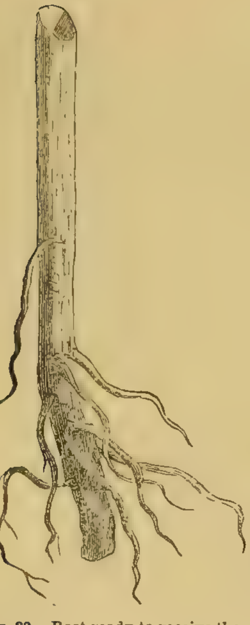


Fig. 20.—Root ready to receive the graft.

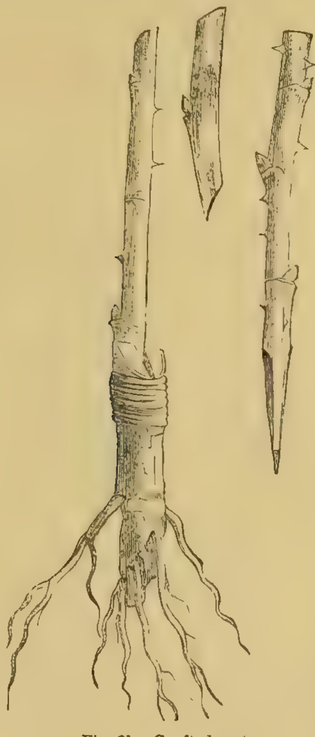


Fig. 21.—Grafted root.

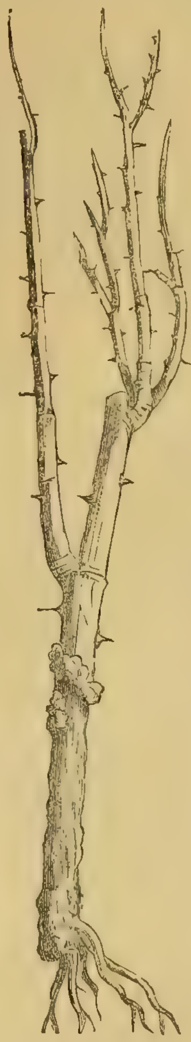


Fig. 22.—Grafted root.

Shield-grafting.—A shield-bud is an eye or rudimentary bud which is taken off the shoot where it has grown, in order to be applied to the branch or shoot of some other species or variety. This operation can only be performed on plants when they are full of sap; but the results are different according as we perform the operation in the summer or autumn. In the first case the shield-bud or eye may at once develop into a shoot and bloom; in the second, the eye seems, as it were, to go to sleep only to wake up in the following spring. Hence arises the difference between growing and dormant eyes. The method of taking off the shield-bud and of placing it on the stock prepared to receive it being the same in every case, we give the following details concerning it before proceeding to describe other modes of grafting. In taking off the bud we hold the branch with the left hand, the larger end towards the wrist, keeping it steady between the finger and thumb. The grafting-knife is held in the right hand, and kept firm by the four fingers, which must be closed upon it. The thumb of the right hand is pressed against the shoot just under the eye which is to be cut out, so as to strengthen and direct the movements of the hand. The blade of the grafting-knife is then inserted at about 3-5th in. above the bud, so as just to pass through the bark. The blade of the knife is now carried in a downward direction past the bud, separating it partially from the shoot, and leaving attached to it a strip of bark about 1-6th in. wide and stopping at about $\frac{1}{2}$ in. below the eye. The blade of the knife must now be gently withdrawn sideways, and the bud entirely separated from the shoot by cutting off the loose strip of bark with the eye attached by a transverse cut from the outside. This is shown at D and E, fig. 23. Take hold of the bud by its petiole, and, turning over towards yourself, slice off the thin layer of young wood which may be noticed on the upper portion. This operation is greatly facilitated by slightly bending the upper part which has been cut slanting, when the young wood will separate from the bark, and may be taken off with the point of the knife. This operation must be performed with great gentleness and care, so that we may not injure the root of the bud. Rather than run the risk of injury, we may even leave a small portion of the young wood adhering to the bark, especially when the sap is strong in the shoot. To graft the shield-bud on the stock, we must previously have made two incisions in its bark at right angles to each other in the form of a T, the upright cut being parallel to the stem of the stock. The horizontal incision should pass half-way round the stem, and the vertical incision from 1 1-5th in. to 1 2-5th in. in length. These two incisions should just pass through the bark of the stem or stock and no more. We must next separate the bark from the stem along both sides of the vertical cut with the spatula of the grafting knife, so as to allow the strip of bark attached to the bud to be introduced. Holding the bud in the left hand by its petiole, we insert it underneath those portions of the bark which have been lifted up by the spatula, pushing it gently downwards as far as it will go, and pressing it firmly into contact with the young wood of the stock. When the upper portion of the bark of the bud rises beyond the horizontal incision, it is cut off level with it. The shield-bud being in its place, the junction is bound round with worsted, as shown at B and C, fig. 23. A double layer of worsted is first wound round the upper part of the graft so as to bind the angles made by the two incisions firmly together, continuing the operation downwards past the lowest part of the vertical cut. The end of the worsted is passed through the last loop of the ligature and drawn tight. The ligatures are allowed to remain on the grafts until the stock is ready for pruning, which, as we shall see further on, takes place about a fortnight or three weeks after budding in the case of growing eyes, and not until the spring when dormant buds are grafted. To remove the ligatures, we cut through the worsted on the opposite side of the stock to that where the bud is placed so as to avoid all chance of accidents. It has been proposed to remove shield-buds from the parent plant with horse hairs and to replace the worsted ligature by sheet lead or india-rubber bands. These pretty contrivances are only amateur's fancies, and not worthy of the attention of the practical workman, who cannot afford to lose his time, having frequently to graft seventy or eighty stocks in an hour. J. LACHAUME.

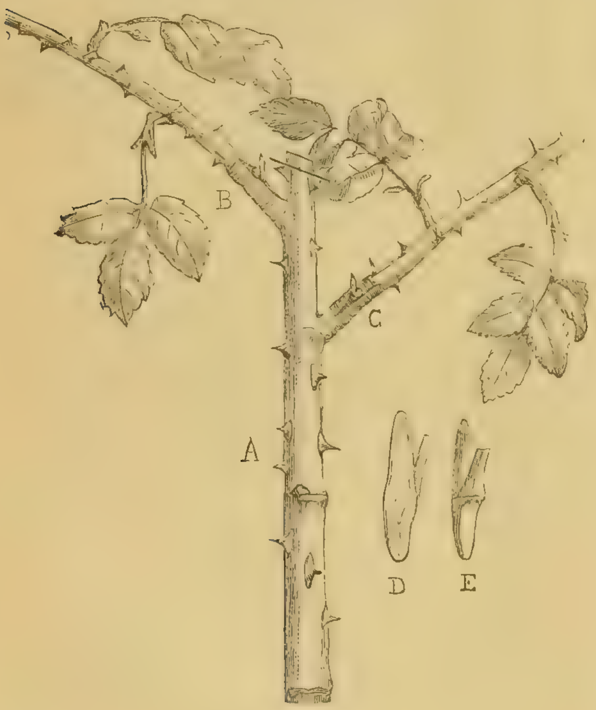


Fig 23.—Shield-grafting.

ROSES ON GRASS.

Now that croquet has died a natural death, and lawn tennis is considered by many too great exertion in hot weather, and by others only suitable for very young people, lawns will again become sources of delight to all true lovers of flowers. I am not writing for those able to devote 20 rods of Grass for the purpose of amusement, and yet possess their half acre for the growth of perennial, biennial, and annual flowers. Once more our Grass will be relieved from its sameness by beds of flowers many tinted, according to the taste of the owner. Roses, Pelargoniums, Verbenas, Calceolarias, Ageratums, &c., will resume their sway—delightful sway, both from their beauty and fragrance. I am now about to turn my croquet lawn to a better purpose, viz., plant it with several dozen standard Roses, at distances of not less than 9 ft. apart, for I am convinced that all standards thrive better singly than massed. My plan of planting will be as follows: I will lift the turf at least 2 ft. square, and remove the soil to the same depth; then make provision for good drainage by using from 4 in. to 6 in. of broken flint or other material easily procured. If turf can be spared I will cover the stones with it, always remembering that the Grass must be downwards; there then will be left at least 15 in. for good soil to nourish the roots, independently of the gain from the space intervening—by no means to be despised where Roses are 9 ft. apart. As to the after treatment to ensure good blooms, both in November and March a little thoroughly rotten manure will be dug in, but not deeply. On no account should the soil be made too rich, for at any time in the summer some liquid manure can be added, or a table-spoonful of some artificial manure (such as Standen's) may be watered in. Excessive generosity to all Roses only tends to overgreat growth of wood. I have often seen a shoot of improved Devoniensis from 8 ft. to 10 ft. in length, and seldom are there in such cases many blooms. The same thing may be said of Cloth of Gold and Maréchal Niel; the two latter shy bearers, except under glass. As to pruning, most people begin much too early; the season must be some guide, and the milder it is the later should the knife be used, else the flowers will be premature and at the proper showing time absent.

Litton Cheney, Dorset. EUGENE E. P. LEGGE.

The Old Pink China Rose.—I have been much interested in the remarks on old-fashioned Roses in "Notes by an Old Rosarian (p. 455), and would like to ask how it is the old pink China is not more planted. It is nearly always in flower, and at this season of the year the buds are beautiful. In a small garden not far from where I am writing there is a large bush of this delightful old Rose with dozens of flower buds out in various stages of development, and it is rare, indeed, to find it altogether flowerless. It does not require much pruning or training. The shelter of a wall seems to suit it admirably. The best plants are generally found against old-fashioned cottages, where the eaves project to keep off cold rain and snow. In such positions, where the roots are not often disturbed, I have seen well-furnished plants as much as 8 ft. or 9 ft. high. It is a good border Rose, too, but does not attain to so large a size in such situations as against a wall. Planted in good mellow soil, well drained, and the plants not dug amongst, but well mulched instead with old manure or leaf-mould, a good mass of this Rose would be a sight worth seeing. It is very easily propagated by means of cuttings struck under handlights.—E. HOBDAY.

Mildew on Roses.—I find nothing equal to Ewing's Mildew Composition for clearing Roses of this fungus. Our garden being in the middle of a wood which is full of decaying vegetation, we have an opportunity of giving it a good trial.—F. CANNELL, *Felthorpe.*

Tropæolum canariense (aduncum) Seed—Probably seedsmen are scarcely acquainted with any other article of their trade that varies so much in price as does the popular annual so called. It should, however, be noted that it is not Tropæolum canariense at all, but P. aduncum, the error having, no doubt, originated from its being popularly called the "Canary Creeper," from its yellow flower. In 1876-7 the wholesale price was from 9s. to 12s. per lb. In 1877-8 it went up to as much as 20s. per lb.; and this season there is a material advance in the price over that of last year. This Tropæolum is always in demand, and about once in three or four years there is a scarcity. A long, hot, dry summer will seriously circumscribe the harvest, and the same experience holds good in the case of the past cool, moist summer. In all probability this is owing to the ravages snails, slugs, &c., made among the young plants. The uses to which this pretty Tropæolum is put to in gardens are many. One of the most striking and effective was witnessed at Muckross, Killarney, a few years ago, where hedges of the Scarlet Invincible Sweet Pea, and the Canary Creeper, intermixed, were, as also at Culford, in Suffolk, one of the features of a place full of horticultural interest.—"Gardeners' Chronicle."

THE FLOWER GARDEN.

DISA GRANDIFLORA IN THE OPEN AIR.

Has the out-door culture of Disa grandiflora ever been fairly tried in suitable localities in the southern and western shores of England, in the south of Ireland, or on the west coast of Scotland? When we know that the numerous North American Cypripedia, Darlingtonia californica, Hyacinthus candicans (Cape), Aponogeton distachyon (I have been shown a pond in the Isle of Wight where this plant was in flower during the winter months with a thin coating of ice and snow on the surface of the water), and many other plants, once thought to require protection, can in our climate be safely left to take care of themselves during our long winters, if only planted in situations suitable to their requirements, we may fairly, I think, expect, when we consider the peculiarities of habitat in which Disa grandiflora flourishes, and which I will proceed at once to discuss, that it will very shortly be added to the list of those plants which in many parts of our islands, where their peculiarities can be easily and suitably ministered to, are successfully cultivated without any protection. Allow me, then, to recall attention to Mr. Henry Buckley's vivid description (Vol. XIII., p. 275) of his visit to Table Mountain. It is there stated that at an altitude of not less than 3000 ft. above sea level, "less than a quarter of a mile brought us amongst quantities of Disa grandiflora; and well may Harvey term it 'the pride of Table Mountain,' for it would be difficult to find a handsomer or showier flower; and when you see a dozen or fifteen of its brilliant-coloured blooms clustered together, it is a sight not readily to be forgotten. The intensity of its colour exceeds that of any wild flower I have ever seen, the Snow plant of California, with its rich colour contrasting with the spotless snow, excepted. D. grandiflora grows most plentifully on the sides of the narrow watercourses which intersect the plateau, the sides, as a rule, being nearly upright, although we saw numbers on the face of large rocks where water was trickling down. The soil it grows in is a sandy peat, and it may almost be said to grow in the water, the soil being so wet; and as this is the driest month here, it is clear that the roots are always in wet soil, and I believe they never rest, as examination showed that they were even now pushing forth new growth." I am also favoured with an account from a correspondent resident at Cape Town exactly tallying with that of Mr. Buckley as to soil and locality. He writes: "This very beautiful Orchid is always found growing on the margins of ever-flowing rivulets and ledges of waterfalls; their roots are always under water, and frequently for days together are entirely submerged. In June, July, and August"—corresponding to our December, January, and February—"they are frequently covered with snow and hail. In 1878 they were, to my knowledge, so covered twice. I have frequently found ice on the slopes of Table Mountain 2000 ft. below the Disa's haunts. The water on Table Mountain is cold, even on the hottest day in summer. The Table is frequently covered throughout the year with cloud or mist, and it frequently hangs on for four or five days, and at all such times the temperature is very low. In May, 1876, I was on the mountain for eight hours in a mist that came off the sea from the north-west; it was very, very cold. During our hottest months the Table is most frequently covered. At that season the cloud comes from the south-east with a very strong wind, and is even colder than in our cooler months. I have always found the Disas growing in sphagnum, peat, and sand. I have been on Table Mountain in midsummer, but have never found it so hot as in Cape Town. I have every belief that the Disas would grow well out-of-doors in the south of England by the side of a running stream."

It is to be specially remarked from these accounts—both furnished by eye-witnesses—that even in its native habitat this glorious Orchid (one of the most beautiful of all) is mainly found on the banks of rivulets, or where water is constantly trickling downwards. Likewise that not only in winter is severe cold experienced there for three months equal to or greater than any which is felt in many of our southern and western shores, but that even in summer, when the plants are in full luxuriance, they are for days exposed to a low temperature, cold winds, and the chilling effects of wet mist. *Primâ facie,* we might, therefore, I think, fairly infer that if in suitable sites, viz., the banks of rivulets, little beds of sandy peat and sphagnum be provided for it, this glorious Orchid may easily be acclimatised with us as an outdoor plant. It is also clearly to be inferred that it must not be planted in shady spots; for, according to our correspondents, while its roots are in wet soil its foliage is in full sunshine. That it, if successfully acclimatised, would be one of the finest additions to the list of our outdoor plants is evident from its description in Williams' "Orchid Manual"—"This gorgeous Orchid grows to the height of 1 ft. to 1½ ft., bearing on the top of the stems from two to five beautiful scarlet flowers in June and July. The blossoms last a very long time in perfection. The flowers are from 2 in. to 3 in. in diameter. The variety called Superba has flowers more than 4 in. in diameter, of a bright scarlet and crimson, veined with pink." Surely to acquire such a brilliant flowering plant is well worth a trial?

Colchester. A. Wallace, M.D.

WINTER BEDDING PLANTS.

Those who attended the Royal Horticultural Society's meeting at South Kensington on the 19th inst. had a rare opportunity of inspecting a most extensive and varied collection of hardy plants, suitable for furnishing flower beds in winter, shown by Messrs. Veitch. They were arranged in three long rows, filling the spacious entrance to the council room, and, as they were in circular, flat baskets, they afforded a good idea regarding the effect which they would produce when planted in the positions which it might be desirable to decorate. The advantage of using plants of the class exhibited is, that a really good effect might be produced at once, *i.e.*, immediately the summer bedding plants are moved, and by blending the winter and spring gardening by adding a margin of early flowers and mingling the bulbs with the dwarf plants, a really fine display might be insured throughout the whole season with this additional advantage, viz., that whereas most of the ordinary spring and summer flowering plants are useless and cast away as soon as their beauty is past, the plants in question being of a more permanent character increase in value. When grown too large for the purpose under notice, they come in for filling up shrubberies and permanent evergreen beds. Many, too, form beautiful single specimens, and if allowed space in which to develop themselves, become objects of interest for many years. Conspicuous amongst variegated plants were several kinds of Euonymus, Hollies, Ivies, and Aucubas, the latter loaded with berries, which unfortunately do not colour early enough out-of-doors to be effective for winter work. Of Skimmias, some excellent plants were shown both in fruit and flower; but of berry-bearing plants, one of the best was Pernettya mucronata, which was quite loaded with purplish fruit. Amongst the best flowering plants were the well-known Laurustinus, Menziesias, and hardy Heaths, but, according to my idea, the baskets of Retinospora plumosa and R. obtusa aurea (the latter a beautiful golden Conifer) carried off the palm; nothing, in my opinion, can excel these lovely hardy plants, especially in winter when every small branchlet bends beneath its drop of dew, or is crested with hoar-frost. Dark-foliaged plants, from the well-known Berberis Aquifolium to the choicer introductions of a more recent date, were too numerous to advert to in detail. I need only add that those who have a garden which they wish to make enjoyable "all the year round" will find plenty of variety amongst such plants as those to which I have just alluded, and they are obtainable at a price that does not prohibit their almost universal cultivation J. Groom.

—— Messrs. Veitch's collections of dwarf shrubs for winter bedding are doubtless charming; but, alas! they are beyond the reach of poor folk. Permit me, therefore, to describe a bed here, which is exceedingly effective now, and will be still more so in spring. The bed in question is circular; the centre is a round block of Viola Golden Queen, interspersed with a few Tulips of the variety called Kaiser Kroon; next comes a broad band of Ajuga reptans purpurea; next a single line of variegated Arabis; then a double row of Viola Blue Bell; and lastly, as an outside edging, a line of Golden Feather. It would be difficult to beat this bed, either as a winter or spring arrangement. All the plants used are cheap and easily propagated, with the exception, perhaps, of the Tulips, which are a pure luxury and quite unnecessary. A thin mulching of Cocoa-nut fibre keeps all snug, and adds considerably to the harmonious colouring of the whole.—Herbert Millington, *King Edward's School, Bromsgrove.*

Saving Old Bedding Pelargoniums.—Mr. F. Cannell (p. 463) is mistaken in thinking I have omitted the one thing needful (p. 412

to preserve these successfully. Had I said anything at all about heat, I would have said avoid by all means putting them in heat, especially at first, because if one begins with heat in October, it must be continued on during November and December, and probably for months longer, or the growth made first in "heat" will be worthless in spring. As soon as ours are put in boxes, they are placed in a Vinery in which the ventilators are open every day, and night too in mild weather. With the air circulating about them in this way not one of them "rots," and the growth which every one makes is not easily checked.—Cambrian.

EAST LOTHIAN STOCKS.

These Stocks are, without doubt, grand decorative summer plants in the north, where the cooler season seems to suit their growth and development; but Burghley is rather more south than north, and the treatment that answers in the home districts will doubtless be found the best at Stamford. In the neighbourhood of London the East Lothian Stocks, which are a more robust strain than the well-known Market Intermediate, thrive and perfect themselves best when sown late in the autumn in cold frames, are allowed to stand in the seed bed for the winter, and are planted out when strong in the spring. In this way an earlier bloom is ensured, and, of course, a much longer period of flower. Under the thin, but nevertheless efficient, protection of a glazed light, Stocks will withstand a good deal of frost, and if very hard weather ensue, a mat or two or some Fern covering will keep them out of danger. An undoubted advantage is found if some of the strongest plants from the seedbed be pricked out, with a few inches distance between each, into another frame, or into small pots, as these transplant more readily and are sooner established than they otherwise would be. Plants thus wintered, put out into rich soil, will make good growth, and will bloom profusely; indeed, if kept moist in warm weather, they make superb bedding plants, their rich and well-defined colours furnishing hues that are not more finely displayed by any other bedding plants. Many growers of these Stocks, however, treat them as annuals, and sow them in bottom-heat in April and plant them out into the open beds in May. When this is the case the plants do not attain to such size, neither are the spikes so fine, but there is a large amount of bloom produced, and it continues so late into the year that in mild seasons these Stocks have furnished bloom at Christmas. Spring-sown Stocks should not have such rich soil, but will perhaps require even more moisture, as if the growth be once checked the plants rarely are so fine as would have been the case had the growth been free and continuous. The origin of this fine race of stocks seems to be somewhat obscured, but that East Lothian is the locality from whence they sprung there can be little doubt. Judging by the habit, growth, and colour of the flowers, they have some affinity to the Queen Stock strains; and, indeed, they are exactly intermediate between these and the Ten-week kinds. The old Queen Stocks have scarlet, purple, and white flowers; the East Lothian kinds have similar colours, but somewhat intermixed, that is, brighter in the dark colours and purer in the white kinds. The plants have a robust, compact, but branching habit, in this respect exactly corresponding with the growth of the Queen kinds, but that of the latter is coarser, yet more hardy; indeed, these latter are the hardiest of the Stocks, and no doubt many of them are sold as Lothians. In another respect the Queen kinds are most valuable, because, being hardy enough to withstand in the open severe weather, they begin to bloom early, and will make grand masses of colour in April and May. Large breadths of the rich purple kind, commonly—but incorrectly—called the Twickenham Purple, are grown in Middlesex for the London market, the proportion of doubles being about 75 per cent. I think growers in the south of East Lothian Stocks would prefer the Queen kind for borders, whilst the others are undoubtedly best for the filling of beds and for producing a rich summer display. A. D.

Tritonia aurea.—Your correspondent, Mr. C. W. Dod, in his most interesting articles on growing the above-named plant outdoors, remarks that when treated as a greenhouse subject he finds the leaves wither and dry up prematurely without any apparent cause, but if he will examine them closely he will see that their dry, flabby look is owing to the presence of red spider, an insect to which this plant, more than almost any other, seems particularly liable. When grown in pots, unless under special treatment, it is almost an impossibility to keep it free from the ravages of this insidious pest, and the only way I have ever been successful is in placing the plants in cold, damp frames, where they get plenty of air and never suffer from want of moisture at the roots all through their period of growth, for if this takes place so as to give them a check the enemy is quickly on them. As soon as winter is over the best way to treat them is to plunge them somewhere out in the open where they are subjected to rain and night dews, and can have a syringing overhead occasionally during dry weather. Under glass the aridity of the atmosphere is too much for them, and I have never yet seen healthy green foliage on any at the time of blooming that had been in confinement longer than was necessary to bring out the flowers; but since we have managed them in the manner just stated, the leaves last fresh and bright-looking till they begin to ripen off naturally, and, as soon as they do this they require repotting, which should be done by giving them a shift into a size or two larger without disturbing the balls, or by a simple division if the object be to increase the stock, or, it be desired to confine them to the same sized pots, as the less they are pulled about the better they succeed, on account of the way their roots and stolons get intertwined and matted together. We are now planting spare stock out close to a sunny wall, a position the Tritonia does well in and affords plenty of flowers for cutting. When grown in the open, I find that the mulching of the ground is a great help to it, as a few inches of leaf soil, Cocoa-nut fibre, or anything of that kind will keep out a good deal of frost, and, when protected in this way, the plants will pass the hardest winter in safety.—S. D.

—— I can add even stronger testimony to the hardiness of this plant than that adduced by Mr. Alexander (p. 463). Four years since I placed three clumps of it in a north border with the idea of thus lengthening the blooming season. Each succeeding year has brought forth more vigorous shoots and a greater quantity of flowers, lasting till the end of October. I must add that the natural soil is a cold and somewhat wet clay, and the bulbs have not for the last two years had any protection from frost whatever. So, although undoubtedly they would be more successfully grown in peat, yet this is a proof that they will do more than exist in clay.—E. Farrer *Petygarde Hall, Swaffham, Norfolk.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Fuchsia pumila.—I am glad to find this very pretty miniature plant creeping to the front again. I remember bedding it out thirty-five years ago, and I have carried it about with me ever since. Bedded in small beds by itself, or used as an edging to beds of the larger Fuchsias, it is simply charming. I am afraid that F. microphylla will, as an outdoor plant, be found more curious than useful. There is another with more minute foliage still, viz., F. thymifolia, and I have long cultivated a pretty variegated form of what is known as F. coccinea, but which is, I believe, F. virgata; this I call F. tricolor, from the very constant and varied tints of its foliage. It is not so coarse as the type, and truly hardy.—T. Williams.

Arum Lilies (Callas) Out-of-doors.—Referring to the remarks of Mr. Andrews (p. 163) on this subject, I may mention that I have had in my garden pond for more than twenty years past a large number of Arum Lilies (Callas) all the winter long, and I have never lost a plant. A moderate spring flows through my pond, which is not frozen over, unless with a smart frost. They increase from year to year spontaneously from seedlings, as well as laterally from the old roots, which are planted in the natural soil and kept down by a few large stones. We have had from fifty to one hundred blossoms out at one time, and the fine, tropical-like leaves are as yet untouched by frost, and are highly ornamental.—Burwood Godlee, *Leighside, Lewes.*

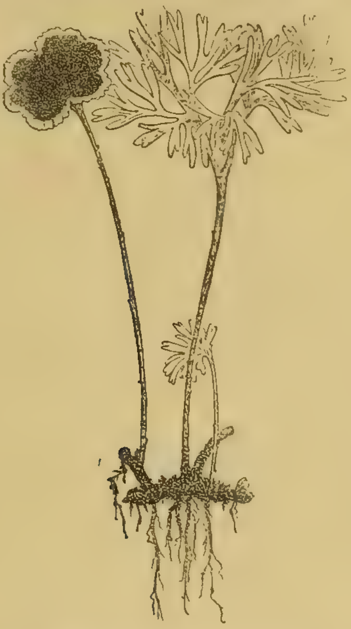
Valeriana Phu.—In answer to the inquiry about this plant, I may state that it is not known as British, but is a native of Germany. In its ordinary form it is a plant of no great merit, being decidedly coarse. The British plant, supposed to be identical with it, is V. officinalis. The variegated Polemonium is certainly a form of the British P. cœruleum. I have grown the Meum Athamanticum for years, known by the strange name of Bald-money. It has a very delicate Fennel-like appearance, and is remarkable for its multipartite, hair-like leaflets, but certainly not like an Adiantum. Its beauty is best appreciated when grown in a pot.—T. Williams.

Winter Quarters for Echeverias.—Where room under glass is scarce, flower garden Echeverias may be stored away in a shed or tool-house. If packed closely in boxes they will need no water during the winter, and will endure uninjured from 10° to 15° of frost. If the winter be exceptionally severe, a mat or two thrown over them will be sufficient to insure their safety. I have kept them in this way when the thermometer has registered 18° and 20° some nights in succession.—J. Cornhill.

The White Azalea Planted Out.—We shall be greatly obliged to any correspondents who will inform us as to the districts in England, Ireland, or elsewhere in which this well-known shrub flourishes in the open air.

NEW OR RARE PLANTS.

Acrostichum peltatum.—Though not new in cultivation, this elegant and curious little Fern is so rare as to deserve bringing under the notice of our readers. It belongs to a section of the genus Acrostichum, called Rhipidopteris, including two other species. The accompanying engraving represents a small portion (natural size) of a plant bearing one fertile and one sterile frond. In a wild state it creeps over rocks and the moist trunks of trees, the slender, trailing stems attaining 1 ft., 2 ft., or more in length, and interlace so that the fronds form a dense carpet. If not commonly seen in our Ferneries, it is not rare in a wild state, as it inhabits the subtropical, mountainous regions of America, from Mexico to Ecuador and Guiana, and it is also common in the West Indies. The other species are, A. fœniculaceum, a native of Ecuador and Peru, having rather larger, barren fronds divided into thread-like segments, and A. flabellatum, from the same region, with the fronds divided into three or four broad segments. Mr. Ley, of Croydon, from whom the plant figured above came, finds it to succeed on a shelf in a warm greenhouse, potted in rough peat and small pieces of sandstone.


Acrostichum peltatum (natural size).

Phajus Dodgsoni.—A handsome species or variety allied to P. albus ("Botanical Magazine," plate 3991), but much superior, the petals being pure white and the interior of the labellum yellow, with red-brown longitudinal lines. This and P. albus differ from most of the other species of the genus in having an erect, leafy stem terminating in a pendent raceme of flowers. P. Dodgsoni is one of Mr. B. S. Williams' importations from the East Indies. Mr. Williams was awarded a first-class certificate for it by the Royal Horticultural Society in August, 1877, not 1871, as inadvertently stated in the "Floral Magazine."

Saxifraga Schmidti.—The "Gartenflora," plate 946, contains a figure of a Saxifrage under the above name, and belonging to the same section as S. crassifolia, from which it differs, Dr. Regel states, in its "denticulate ciliate," fringe-toothed leaves; from S. thysanodes (Lindley) by its glabrous leaves; and from S. ligulata and S. ciliata by its paniculate flowers, similar to those of S. crassifolia. Messrs. Haage & Schmidt sent this plant out under the name of S. thysanodes. Dr. Regel at first took it to be S. crassifolia, but besides the difference indicated above, it is a much tenderer plant, and may, perhaps, prove a variety of S. ciliata. As an ornamental plant it is inferior to several others of the same group. The same number of the "Gartenflora" also contains a coloured figure of Anemone nemorosa var. Robinsoniana, and an uncoloured plate of Dieteria coronopifolia, an asteroid composite with large blue and yellow flower-heads, a perennial with the leaves pinnately cut into narrow segments flowering in autumn, and very hardy. W. B. Hemsley.

THE FRUIT GARDEN.

FRUIT TREES IN AUTUMN.

The importance of manuring cannot be over estimated by those who desire to have healthy trees, and good sound fruit. After a tree has thoroughly matured its produce, it is much exhausted and requires nourishment; it is, therefore, in the best condition to benefit by a judicious application of well-rotted manure. When the juices are no longer absorbed by the fruit, they are directed towards the buds containing the embryo crop of the following year, and on the fact, whether such buds are well fed or starved, depend both the quality and quantity of the future fruit. Any one who is in the habit of observing the manner in which the same varieties of fruit are grown in various gardens cannot fail to have noticed a great diversity between those which are well grown and those badly grown, some being fine and abundant, others scanty and inferior. Now, it should be borne in mind that trees continue to derive nourishment and support from their roots during the whole winter; in fact, they are storing up vigour and strength to carry them through the trying period of blossoming and setting. This is especially the case with Peaches, Nectarines, Pears, Apples, &c. Unsuccessful setting and stoning, and consequent failure of the crop, are too frequently attributed to bad spring weather or late frosts. The real cause of these disasters must, however, be sought for, for the most part, in weakness and want of vitality—the result of bad and injudicious feeding. Proper mulching in autumn would have done much to supply these deficiencies. The manure should not be (as I have often seen it) heaped round the bole of the tree (perhaps for a considerable way up the stem), thus encouraging the growth of suckers from the original stock, and doing mischief instead of good, but a small portion of soil should be removed from the roots as far as they extend; the manure may then be applied, but not allowed to come in direct contact with them, and the soil should be raked back over the manure. By this process the roots are induced to come to the surface for their food, and become matured by the warmth of the summer sun. The manure should be good material, containing nourishment in a soluble state, whose beneficial substances can be washed down by rain or artificial watering. I repeat that the manure should be good. Too often it is rendered poor and useless by over-fermentation. Manure is best rotted by means of slow and moderate fermentation. If the heat be too great, the ammonia is driven off and the manure becomes littery, dry, and inert, and consequently of little value; but when it is properly fermented, the ammonia remains absorbed, and is nutritious and highly beneficial. Trees derive very little good, if any, from fresh or unfermented manure. To heavily manure a tree every third or fourth year (the common practice) is not advisable; it should be done moderately every year. Nature herself points out to us the best seasons for this top-dressing. She spreads a thick litter of fallen leaves over the roots, thus giving nourishment in autumn and protection in winter, while in spring and summer a carpet of green grows up around the trees, thus preserving moisture and preventing evaporation. So should we in like manner in autumn and winter feed and protect and in spring and summer top-dress, to retain the dews and rain, and to prevent dryness. W. N.

Hillside, Newark.

Quickly-grown Smooth-leaved Cayenne Pines.—On the 17th June last I removed from old stools two suckers which had started and nearly done flowering. They were potted in 10-in. pots and plunged in a bed of leaves. On the 12th of October the first fruit was cut; it weighed 7 lb. 7 oz. The second was cut on the 21st of the same month, and weighed 6 lb. 6 oz. From the time they were removed till they were cut they were subjected to scarcely any fire-heat.—M.

Late Plums.—I quite echo the opinion of Mr. Fish (p. 471) as to the value and excellence of Ickworth Imperatrice (Knight's No. 6) as a late Plum. I have grown it for many years, and find it all he describes it to be. As a standard it seldom bears oftener than once in three or four years to any extent, but from a trained tree on a suitable wall (west I find best) it is more fertile. Too much cannot be said in favour of Coe's Golden Drop as an excellent late Plum, bearing well in all forms, but best on a wall. As a very late culinary sort, Wyedale lasted here till the 18th inst. in the open, and is a profuse bearer; not at present much known.—W. Roden, M.D., *Kidderminster.*

NOTES OF THE WEEK.

Stenocarpus Cunninghami.—This handsome Protead is now in flower in the gardens at Perryfield, near Godstone, where it has been for twenty years without, until now, producing blossoms. In its native country this species forms a lofty tree, having a bright red and yellow inflorescence, and long, handsome, leathery, Oak-like leaves, deep shining green above and pale green beneath. Where opportunities exist for growing plants of large size a place should certainly be found for this Stenocarpus.

Callipsyche aurantiaca.—This is an Amaryllid not often met with, but it is one which might be grown with advantage for mixing with Ferns or Mosses at this time of the year. Its tubular-shaped flowers, which are produced whilst the bulbs are leafless, are borne in whorls on long fleshy stalks, and are of a bright golden yellow. We met with it in Messrs. Henderson's nursery at Maida Vale.

A Powerfully-scented Orchid.—Maxillaria picta is well worth growing if on no other account than for its pleasant and powerful perfume. It is not by any means one of the most attractive of winter-flowering Orchids, but a few plants of it in flower placed in a conservatory will scent the whole house. We lately saw plants of it blooming freely in the Holloway Nurseries.

Ipomœa Horsfalliæ.—This old-fashioned stove climber, which flowers freely in a warm greenhouse all through the winter, is not so common in gardens as its attractiveness and easy culture would lead one to suppose it would be. It should be trained under the roofs of houses on wires about 1 ft. or 18 in. apart, so that it obstructs little light from the other occupants of the house below it. There is also a kind named I. cœrulea, which flowers at this time of the year, and which might be associated with Horsfalliæ, as its sky-blue flowers would contrast well with the rich magenta-coloured blossoms of I. Horsfalliæ. Both kinds are now in flower in several places about London.

Lælia autumnalis.—A fine variety of this Orchid is now in flower in Mr. Williams' nursery, Holloway. It is one of the best of winter-flowering Orchids, and one which thrives well in a cool house. It may be grown with equally good results either in pots or pans, or on blocks of wood or cork, and on that account may be made available for any position in which it may be desirable to place it. With it are associated finely-flowered Oncidiums, such as O. Forbesi, Rogersi, and tigrinum, and a variety of Lady's-slippers; also the waxy-flowered Maxillaria venusta, stalwart Vandas, and pretty Odontoglossums, all of which, intermixed with Ferns and Grasses, have a charming effect.

Japanese Chrysanthemums.—Notwithstanding that these are, from an artistic point of view, much more beautiful and graceful than the incurved and Pompone-flowered kinds, we notice that but few plants of them are exhibited at Chrysanthemum shows. Blooms of them are shown in a cut state in limited numbers, but about 90 per cent. of the Chrysanthemums shown are ordinary kinds. Whilst some of these, as regards form, are almost perfection, a little more attention might nevertheless be paid with advantage to the fine Japanese kinds now to be found in good collections. Their flowers possess a brilliancy and variety of colour not to be found in other plants, and from a decorative point of view they are infinitely more effective. There are good displays of Japanese kinds just now in several of the principal London nurseries.

American Camellias.—Cultivators, as a rule, are unaware of the advance which has lately been made in the production of seedling Camellias in the United States; Wilder's Jenny Lind, Mrs. Abby Wilder, and a few others are well known; but the very remarkable seedlings of Messrs. Hovey, of Boston, not yet "let out," appear, from all reports, to eclipse any yet produced. These seedlings have been frequently exhibited before the Massachusetts Horticultural Society, and one of them has been awarded a gold medal (£12). In a recent number of their "Transactions" we find the following descriptions of three of the finest: "Mrs. Anne Marie Hovey.—This beautiful variety continues to maintain its character of producing a great variety of colours on the same plant; indeed, entirely new combinations of colours are displayed by it every year, the marbling, spotting, pencilling, blotching, tinting, edging, and dotting of the various flowers have no parallel among plants. C. M. Hovey.—This is a very fine scarlet Camellia; of precisely the same tint as that of the bracts of Poinsettia pulcherrima; in size it measures from 5 in. to 6 in. in diameter, and in form is remarkable for its great regularity and depth, as well as its petals, which are bold without a notch or serrature; the growth is vigorous, the leaves large and glossy, and the plant has a fine, bushy, branching habit. C. H. Hovey.—This is the dark variety so frequently exhibited, and now first named. Its colour is quite new, resembling as nearly as possible that of Lord Raglan Rose, or some of the new dark crimson-shaded Roses, a colour never seen in any Camellia yet produced. The shape is perfect, the petal as round as if cut with a compass, and the habit vigorous, bold, and spreading." We understand that Messrs. Hovey have placed in the hands of Mr. Stevens a few of the plants of these magnificent varieties for sale, affording an opportunity for cultivators to add them to their collections.

Royal Botanic Garden, Edinburgh.—We learn that Mr. Sadler, well known in connection with this garden, has been selected for its curator in the room of the late Mr. James McNab.

Dendrobium bigibbum album.—This is now in flower at Holloway. The plant is exactly the counterpart of the rose-coloured kind, whilst its blossoms are white, delicately flushed with violet. When well known, it will no doubt be grown as largely as the rose-coloured variety.

Japanese Primroses in Norfolk.—The Rev. Mr. Nelson informs us that these plants (of which several improved varieties were illustrated in colour in The Garden of November 23) flourish freely in the open air in his garden at Aldborough, in Norfolk, among the herbaceous plants in borders.

Chinese Primula Ruby King.—It is no exaggeration to say that this is the most beautiful of all Chinese Primulas. It is now in flower in Messrs. Sutton's nurseries, Reading, and the whole of the plants show a remarkably even dwarf habit. The stems are stout, and of medium height, bearing large trusses of fine blooms, many of which are 2 in. in diameter, finely fringed, and of an intense purplish-magenta, a colour to which no artist could ever do justice. Whenever this grand strain shall become common it must inevitably displace all other purple-hued kinds.—A. D.

Sophronitis grandiflora.—This charming winter-flowering Orchid succeeds in no way so well than when grown on pieces of virgin cork suspended from the roof of the house in which it is grown. It soon covers the cork, and has a fine effect in winter when studded with brilliant scarlet blossoms. It grows well also on the stumps of Tree Ferns and in shallow pans. Its blossoms are well adapted for button-hole bouquets, few flowers lasting in a cut state in good condition for so long a period. Under all the ways just described, plants of this Sophronitis may be found in flower in Messrs. Veitch's nursery, Chelsea.

Chaumontel Pears in Covent Garden.—Fine examples of this excellent Pear are now offered for sale in great abundance in the Central Avenue, Covent Garden. They are imported from Jersey, and are well coloured and ripened. Considering the value of this Pear, it is surprising it is not more grown in English gardens than it is. In cold districts it will not succeed, but where a warm, sheltered place could be found for it, good examples might be obtained; or it would be well worth the expense of a glass-covered wall.

Recreation Ground for Torquay.—Sir Laurence Palk, M.P., has offered to the Torquay Local Board of Health a beautifully situated piece of land as a recreation ground for the nominal rent of 2s. 6d. per annum.

Street Trees.—A contract has been entered into by the local authorities with Messrs. Goff & Sons, nurserymen, Old Kent Road, to plant St. George's Road, Southwark, with Plane trees, from the Elephant and Castle to the Westminster Bridge Road; also to complete the planting of the Blackfriars Road up to the approach to Blackfriars Bridge.

National Rose Society.—We are informed that the annual meeting of this society will be held, by the permission of the Horticultural Club, at their rooms on Thursday, December 12, and that the anniversary dinner will be held at the same place on that evening. The Hon. and Rev. J. T. Boscawen, Vice-President, will preside.

National Auricula, Carnation, and Picotee Societies.—The date of the exhibition of Auriculas (southern section) was fixed the other day for Tuesday, April 22, 1879, in the gardens of the Royal Horticultural Society, and that for the Carnation and Picotee Society for Tuesday, July 22, at the same place; the schedules of prizes for 1878, for each flower respectively, are to be repeated.

Royal Horticultural Society.—The meetings and exhibitions of this society for 1879 have been fixed as follows:—Meetings—January 4, February 11, March 11 and 25, April 8 and 22, May 13 and 27, June 10 and 24, July 8 and 22, August 12 and 26, September 16, October 14, November 18, December 16. Shows—Great Summer Show, May 27 to 30; Whit Monday popular Show, June 1; Rose and Pelargonium Show, June 24.

ANSWERS TO CORRESPONDENTS.

⁂ *All correspondence should reach us early in the week to ensure attention in the current number.*

Plant-covered Walls.—I wish to cover the back wall of a stove with Ficus repens, and have Ferns, Begonias, &c., growing, as it were, out of it. What is the best way to prepare the wall for holding soil for the above? Will cork bark or clinkers be best? and how shall I fasten them?—M. C. [Your best plan would be to get a strong wire trellis, the wires crossing each other so as to form squares or diamonds at distances of, say, 4 in. or 5 in. apart. This should be secured to the wall by means of stout iron staples, or stays, so as to leave about 6 in. between the wall and the trellis. Into this space pack good turfy loam, peat, and flaky leaf-mould, beginning at the bottom and planting the plants as the work proceeds. Sphagnum Moss may be used for the front, or, still better, plant it with Selaginella denticulata.—S.]

Morello Cherries Falling (p. 477).—On heavy clay soils it is not an uncommon occurrence for Morello Cherries to fall off just about the time the last swelling begins. I look upon it mainly as a question of stagnation of growth induced by the failure of the root action at a critical moment. If your correspondent can alter the character of the soil by working in gritty material, such as road-scrapings, burnt earth, a little old mortar, or broken bricks, they would help to open it; and any old turf available might also be added. If possible, the extremities of the roots should be lifted carefully, some of the clay removed, and the trench filled up with better, lighter, and more gritty soil. Clay is about the worst kind of soil for Cherries. As the trees are planted against the dwelling-house, I suppose the site does not require draining.—E. Hobday.

Paraffin as an Insecticide.—Allow me to offer a word of caution to the uninitiated in the use of paraffin. While finding it invaluable for eradicating scale and mealy bug from the Stephanotis and Gardenias without injury, some plants of Ixoras, Crotons, and a Lomaria gibba, dipped a month ago, are now quite denuded of foliage and seem as near dead as possible. I used a small wineglassful of paraffin to a 3-gallon pail of rain water, well mixed together. Probably in dipping the plants much more of the paraffin adhered to the foliage than if it had been applied by means of a syringe; hence the damage. I shall, therefore, for the future apply it with the syringe only.—H. Harris, *Denne Park.*

—— I notice (p. 476) some remarks on the use of paraffin to destroy scale, &c., on Epacrises and other plants. Did any of your correspondents ever try one part paraffin to three parts soft soap, and then dissolve in hot water? It makes an emulsion which does not separate for some considerable time.—W. A. S.

—— I notice (p. 476) mention made of the use of paraffin as an insecticide. I conclude your correspondent means paraffin oil or petroleum. The experience of others has been given in its favour in previous numbers. I tried it in the summer, mixed with water in the proportions recommended, on a Mayduke Cherry tree infested with the black aphis with the following result: I applied it twice with a syringe; it had no effect on the insects, but it injured the foliage. I have tried other insecticides, including Gishurst's and Fowler's, with no better success as regards the destruction of the black fly, and I shall be obliged to any one who will tell me how to get rid of it.—B. S.

Will Rabbits Eat Jerusalem Artichokes?—Mr. W. V. Boro'bridge (p. 477), may rest assured that rabbits if numerous will nibble off the young tops of these artichokes when they first come up. If he could fence them in with wire netting temporarily till the stems were becoming firm and hard, they would afterwards escape. Perhaps the best plan would be to put a permanent fence of galvanised netting round, and then crops of all kinds would be safe. If the land was worth anything it ought to pay for it, and it is worth something to be free from the annoyance of seeing the plants eaten off.—E. Hobday.

——We have a large patch of Jerusalem Artichokes, to which thousands of rabbits have free access, and I have never seen them touch a single root.—Cambrian.

—— In answer to "W. V.," Boro'bridge (p. 477), I am pleased to be able to state that I never knew rabbits to eat the stems of these plants. In one establishment these were a speciality and largely consumed for soups and other purposes. The garden being rather small, and these plants being too tall and rather rubbishy for a kitchen garden, about an acre of ground was devoted to them beside an unfenced wood abounding with rabbits. They never interfered with the plants, but used to attack the root occasionally in unusually severe weather. As these were left in the ground and taken up as required for use, the plan was adopted of earthing them up with about 6 in. of soil, and the roots were seldom attacked by the rabbits afterwards. I have also frequently seen Jerusalem Artichokes grown on the sides of farm fields, and never saw them injured to any serious extent by either rabbits or hares, so that I think your correspondent may safely try Artichokes on his Potato land, so poor and sick of the crop, that it does not return the seed planted, though he must not expect a much better return of Jerusalem Artichokes from such poverty-stricken land, as they surely need good soil to grow a clean or profitable crop. Considering how palatable this vegetable is, and what a general favourite it is when well cooked and served with white sauce or melted butter, and how, as a soup, the Artichoke may be said to rank among vegetables almost as highly as the turtle among fish, it is surprising how little and in how small quantities the Jerusalem Artichoke is grown.—D. T. Fish.

Heating a Small Greenhouse.—"A Welsh Lady" (p. 450) would find a small conical boiler to be by far the easiest to manage for her purpose. Coke only should be used as fuel, and it should be broken up into small pieces, rejecting the dust. In frosty weather get up a good fire, so as to thoroughly heat the pipes; then at eight or nine o'clock, as may be convenient, fill up to the top with fuel, put in the damper to within 2 in. or 3 in., and a steady fire will be maintained all night. Saddle boilers are not so suitable for small structures; they require more fuel and a great deal of attention to keep the fire up.—J. Cornhill.

A Wild Orchard.—After reading in The Garden of November 16 about the Bullace there named and the Cranberries, the idea struck me of adding unto our orchard in Sussex a "wild orchard" with fruit trees such as follow, viz., Quince, Medlar, Mulberry, Bullace, Crab, Pyrus Maulei, Barberries, Blackberries (the large kinds for preserving), Filberts, and, in a suitable place, Cranberries. All these, besides the interest of cultivating them, would yield fruit for preserving, &c. For instance, we have old-fashioned receipts for making an excellent Bullace cheese, Crab jelly, Quince jelly, &c. I venture to trouble you with a view to asking if you can suggest any other similar fruit-bearing trees or shrubs, as we should like to carry out our idea well? Our house is in Sussex between Midhurst and Haslemere.—Charles S. R. [An excellent idea! There are many fruits which could be grown this way that people do not usually give space to, and this applies to the varieties of cultivated fruits, as well as species that are never cultivated. The Natural Order to which most of our fruit trees belong contains many other species not without merit as fruits scattered throughout the temperate regions of the northern world. These trees and shrubs happen also to be most beautiful of flowering trees and shrubs in spring, and are well worthy of culture on that account alone. In Japan, North America, and even the continent of Europe, one frequently sees fruits that are never seen in our gardens; such fruits will be quite at home in the wild orchard. For the sake of growing one family of fruiting bushes alone—the fruiting Brambles of America and other countries—a considerable piece of ground might be profitably devoted. Even amongst the English wild Blackberries there is considerable variety and a good deal of unrecognised merit, as anyone may see by visiting the Cambridge Botanic Garden. Such plants can only be grown fairly where there is considerable space. If so much beauty and interest, and even good fruit, may be found in one neglected family, it suggests how interesting the subject is when considered in relation to the great number of our hardy fruit trees and shrubs. We feel sure that some of our readers can help you with suggestions or with lists. It has just occurred to us that a good feature of such a garden would be plantations of such Apples and Pears as are most remarkable for the beauty of their flowers alone, some being much more striking in that respect than others.]

Icehouse Floors.—In answer to "W. V.'s" inquiry (p. 477) about these, the mere form is of little moment provided it be dry, and there is no possibility of stagnant water resting in it. Most of the best icehouses are egg-shaped, the egg, as a rule, standing on its narrow end. Of course in such the grating is on the lowest part, that is, the middle of the floor. The weakest part of such icehouses is that they are generally too narrow for their depth, thus exposing an undue amount of external surface of ice to the action of the walls. The ice keeps equally well or better in square houses, and the larger these are the less waste. These sometimes have a floor raised in the centre and sloping to the sides; in others the centre is sunk and the sides raised; and in yet others the floor is made to fall to one side or corner. In all cases a porous, hard bottom is preferable to a boarded floor, which soon decays, and has no special merit as an ice preserver.—D. T. Fish.

—— It matters little how the bottoms of icehouses are formed, so long as the wood trellis, grating, or whatever is used for carrying off the water is efficient for the purpose intended; but there is one thing of great importance connected with it, which is—that the drain be so formed as not to admit air to the house, otherwise the ice, from having the temperature raised around it, wastes at a great rate, as it also does if the water cannot get freely away. A house to be perfect should be air-tight, by having close-fitting doors, and passages leading to the well where the ice is packed that can be filled with straw pushed together in a body, and every time any one enters the outer door ought always to be closed before the inner one is opened, as then the external air is excluded. If this be done every time ice is got out, and the passages are made secure in the same way by using plenty of straw, the loss through thawing is very slight. A good way of carrying the water off is to use a swan-neck or ᔕ-shaped bend, in which some of the water always stands, and thus prevents air from entering the house, as it would up an ordinary drain.—S. D.

Clearing a Herbaceous Garden of Weeds.—It is a pity that "R. D." (p. 477) did not take radical means of getting rid of the weeds before planting his bulbs and bulbous plants last spring. Few practices are more unwise than the planting of valuable plants among strong herbaceous weeds, and many old shrubbery borders and beds of herbaceous plants have been allowed to degenerate into something little better than "weederies." Such grounds should be carefully trenched, dug, scarified, burned, or fallowed, and every root and branch of weed, as far as possible, picked out and removed before committing valuable bulbs and other herbaceous plants to it. Dirty beds and borders can hardly be cleared of weeds after planting without inflicting very serious injury on the plants. A good deal may, however, be done by incessantly pegging away at the weeds the moment a root or branch of one appears, and with perennial weeds each head or stem should lead the cultivator to find and destroy a root or underground stem; and the work of destruction must be set about systematically, and pursued continually at all seasons and under all circumstances until not a single weed is left. This labour, however, is very great, and it is much easier to clear the ground of weeds before planting than afterwards. If "R. D.'s" weeds are only annuals they are much easier destroyed. Not a few garden soils are so thoroughly stocked with weeds that it actually seems as if the earth was a sheer mixture of weeds and soil rather than the latter only. At every touch, in all seasons of the year, crop upon crop, and crop over crop spring up in perpetual succession. The remedy is, however, simple and easy enough if only persevered in. Scarify the entire surface of the ground every fortnight throughout the growing season, and any soil, however fully seeded with weeds, must ultimately be exhausted of its stock of seeds and cease growing weeds.—D. T. FISH.

Cloches.—Since you published my remarks on cloches (p. 458) I have succeeded in getting them delivered from France free into my carts in Southampton Docks at 1s. each (40 centimetres=16 in.) without knobs. The Aire & Calder Co. for 16 in. cloches ask 1s. 11d.—A. T. T. PETERSON, *Lymington.*

Names of Plants.—*Anon.*—Your Grass is some species of Panicum, but it is impossible to name any member of such a large genus without having perfect specimens and knowing the native country, &c. *H. J. Ross.*—Bolbophyllum cupreum.

Questions.

Lamium striatum.—What is the L. striatum of Mr. Cornhill? Can it be something new? I never heard of it, nor can I find any mention of it. Has not Mr. Cornhill L. maculatum in view when he wrote his remarks? It has exactly the same variegation as described. There are two varieties of it—L. maculatum album and L. maculatum aureum; the last is a gem. Both, however, are considered varieties of the White Dead Nettle, to which also L. rugosum and lævigatum are now joined. The finest of the genus is L. Orvala.—THOS. WILLIAMS.

SOCIETIES AND EXHIBITIONS.

VEGETABLE AND ROOT SHOWS.

SEVERAL of our large seed-producing firms have during the past few years held shows for the exhibition of roots and other farm and garden produce. Such exhibitions tend to advance the quality of both garden and farm produce, as by frequently sowing seed from these prize roots the stocks in time become improved.

Messrs. Sutton & Sons opened an extensive root and vegetable show on Saturday last, in their large warehouse at Reading, where roots of excellent quality and great weight were shown. The display of Mangolds was remarkable; one Mammoth weighed close on 50 lb, and Globes measured nearly 4 ft. in circumference. Swedes and other Turnips were perfect in shape and quality, though somewhat less in number than last year. The cold wet season setting in just as these were bulbing stopped the growth, and early-sown ones are not equal to those put in later. To this show all the principal growers in the Kingdom sent specimens. The following are the weights of Mangolds in some of the prize collections: Twelve Long Reds weighed 406 lb; twelve Golden Tankards, 377 lb.; and twelve Yellow Globes, 315 lb., or a gross total of 1098 lb. One enormous root girthed 3 ft., is 3 ft. 3 in. in length, and weighed 47 lb. The sewage class was a remarkable one. The following are the weights per acre (Mangolds) as the crop was lifted: Sutton's Mammoth Long Red, 110 tons per acre; Sutton's Golden Tankard (yellow fleshed), 88 tons per acre; Sutton's Berkshire Prize Yellow Globe, 77 tons per acre; and Sutton's Yellow Intermediate, 77 tons per acre. There was also a grand show of Potatoes, vegetables, Cabbages (weighing over 56 lb. each), Carrots, Gourds (162 lb. each), &c The prizes offered for collections of vegetables induced a capital competition. The first prize was won by Mr. Wildsmith, Heckfield, with a collection so good that it could hardly have been surpassed. The twelve kinds comprised large and perfect heads of Veitch's Giant Autumn Cauliflower, dwarf green-curled Savoy, splendid Brussels Sprouts, good Asparagus, Hathaway's Excelsior Tomatoes, short but handsome Master's Prolific Cucumbers, Sutton's Red Beet (perfect samples), Improved Student Parsnips (the best in the show and of perfect form), very handsome Trebons Onions, clean and good pink Celery, scarlet Intermediate Carrots, and Red Strap-leaf Turnips. Mr. Wildsmith also sent for exhibition a large basket of the Autumn Cauliflower, to show that at least at Heckfield it had been no failure. In the competition for twenty sorts of Potatoes Mr. Ross, gardener to C. Eyre, Esq., Welford Park, Newbury, was placed first, and Mr. Wildsmith second. The Potatoes generally were finer than last year, and were much more admired than the field roots. Several thousand people visited the show during the day.

On the 23rd inst. Messrs. Carter & Co, High Holborn, opened their exhibition at the Agricultural Hall, and it may be classed as one of the largest of the great autumnal shows of the season, occupying, as it did, the whole of the gallery—quite one-third of the entire structure. Notwithstanding the complaints in many directions of the indifferent season, Messrs. Carter & Co succeeded in bringing together an extraordinary collection of magnificent roots, all of which, it must be borne in mind, have been grown by their customers under ordinary cultivation. These included some of the largest Mangold Wurtzels that have ever been seen in England, and an additional interest attached to this section of the show from the fact that these roots have been sent from some of Messrs. Carters' customers in the Dominion of Canada. Amongst other roots in this collection there were eight of Carters' Mammoth Long Red, turning the scale at the weight of 430 lb., or an average of about 54 lb. per root; there was also one root of Carters' Warden Yellow Globe Mangold, weighing 60 lb., and one root of Carters' Mammoth Long Red Mangold weighing 63 lb.; there was also one extraordinary root of Carters' New Yellow-fleshed Tankard Mangold which turned the scale at 32½ lb. Turnip classes, as at all other exhibitions this year, were but moderately represented; this will be easily understood when it is remembered that many of the Turnip crops standing at the present time were not sown until August, or at any rate the earlier-sown crops failed to produce a plant in consequence of the unfavourable season. There were, however, some splendid roots of Carters' Pomeranian White Globe Turnip from several well-known farms. Collections of vegetables were well represented, the best twelve dishes being shown by Mr. Pragnell, Sherborne Castle, who had excellent examples of Carters' Heartwell Cabbage (the best kind known for autumn and winter use), Carters' Maltese Parsnip, Pine-apple Beet, Schoolmaster Potato, Carters' Selected Brussels Sprouts, Celery, and Tender and True Cucumber. Mr. Iggulden, The Gardens, Orsett Hall, Romford, won the second prize, and Mr. Neal the third. Collections of Potatoes were also shown by the best growers, among which were noticeable a sackful of Carters' Magnum Bonum from the Prince of Wales's garden, excellent in appearance and quality; also Carters' American Breadfruit, Main Crop, and other good kinds. Mr. Pragnell was awarded the first prize for the best twelve Onions, a class in which there were fourteen competitors.

The annual show of roots, cereals, and vegetables grown from seed supplied by Messers. Webb & Sons, of Wordsley, Stourbridge, was held this year at Birmingham, in the large building known as Curzon Hall. It was the most important exhibition of the kind which has yet been held in the midland counties. The entries numbered over 1600, and the total number of specimens reached 25,000, many of them of great excellence. The collections comprised sixteen classes in the division for specimen roots grown without sewage cultivation, and three classes for roots grown with sewage cultivation. Webbs' Imperial Swede was the leading sort in the show, it being a kind which succeeds equally well in all localities. About 6000 specimens were shown, many of which were of large size and perfect form. White and green Turnips and Mangolds were well shown, the best Mangold being a new kind named Webbs' Kniver Yellow Globe. Potatoes and collections of garden produce were likewise shown in large numbers, and added greatly to the interest attached to the show.

Liverpool Chrysanthemum and Fruit Show.—At the exhibition of Chrysanthemums and fruit held in St. George's Hall, Liverpool, on the 20th ult., there was a brisk competition in several of the classes for cut flowers, trained plants, and also for fruit. The premier prize of five guineas (especially subscribed by Liverpool gardeners) was won by Mr. Tunnington, gardener to Charles McIver, Esq., Calderstone, who staged a unique exhibition, well proportioned, and far ahead of anything else in the show. Mr. Peers, gardener to R. Rayner, Esq., had blooms of extraordinary size, but rather loose and irregular, several of the flowers being past their best; and Mr. Elliott, gardener to W. G. Bateson, Esq., had a very good stand, which gained third place. Trained plants were well shown by Mr. John Hughes, gardener to R. G. Moran, Esq, and Mr. Phythian, the varieties being Mrs. George Rundle, Prince Alfred, Nil Desperandum, Barbara, Mrs. Dixon, and Sir Stafford Cairey. Flowering and fine-foliaged plants were exhibited in good form by Mr. Peers and Mr. Cromwell, the former having a fine bush of the old Plumbago rosea in his collection. Mr. John Hughes had some splendidly-grown Primulas highly coloured; Epiphyllums and other flowering plants were also shown in good style by several exhibitors. Fruit was not shown in such large quantities as usual, but in many respects the quality was equal, if not superior, to what I have seen in former years, especially the superb bunches of Black Barbarossa Grapes contributed by Mr. Playfair, gardener to H. H. Nicholson, Esq, and the Alicante and Mrs. Pince exhibited by Mr. Macmaster, gardener to W. Just, Esq.; the bunches of Mrs. Pince, indeed, were perhaps the most creditable specimens of Grape culture in the show. Muscats and other white Grapes were admirably shown by Mr. Jamieson, gardener to the Earl of Crawford, and other local exhibitors. Pears and Apples (of which there was not half the quantity I have seen at former exhibitions) were very fine, the most noticeable varieties present being Marie Louise, Louise Bonne of Jersey, Easter Beurré, Beurré Diel, Napoleon, Beurré Clairgeau (a grand exhibition variety), Glou Morceau, Passe Colmar, and Gansel's Bergamot. Williams' Pitmaston Duchess was the largest fruit in the exhibition.

Cork Chrysanthemum Society.—The annual exhibition of this society was held in the large hall of the Corn Exchange on the 21st ult. The hall was well filled with plants and the show was the best ever held in the south of Ireland, both plants and cut blooms being of unusual merit, the weather previous to the exhibition having been most favourable for the growth of Chrysanthemums, which have now become universal favourites. The large flowering section was a splendid collection; the Pompones very fine, and the Japanese varieties exhibited by Mr. Cantillon attracted much well-deserved attention. A leading feature of this show was the fine collection of cut blooms exhibited by Mr. James L. Lyons, which for size and beauty have never been surpassed. They were subjects of universal admiration, many of them measuring from 5 in. to 6 in. in diameter and beautifully incurved. Conspicuous amongst them were magnificent blooms of Jardin des Plantes (yellow); Empress of India (white); Globe (white); General Bainbridge (bronze); Boadicea, George Glenny, Mrs. George Rundle, Mrs Dickson (sulphur, extra fine); Venus (blush); Lady Talfourd (purple tipped); Miss Mary Morgan (blush); Baron Beust, and Chieftain.

No. 368.] SATURDAY, DECEMBER 7, 1878. [Vol. XIV.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

THE FLOWER GARDEN.

NEW TUBEROUS-ROOTED BEGONIAS OF 1878.

Having again grown in the open air during the summer now drawing to a close all the new varieties of the above-named most beautiful and highly ornamental plants that I could gather together during the early part of this year from their various raisers at home and on the Continent, to the number of thirty-six varieties with single flowers and three with double, and having carefully compared these novelties with the finest varieties of former years growing side by side with them and under exactly similar circumstances and treatment, I shall now proceed to state briefly, for the information of those of your readers who take an interest in this class of plants, the opinion I have formed of the respective merits of each of these new varieties in the hope that my remarks may not be without some practical use in enabling them to select for themselves for next year's growth those only that deserve a place in a really choice collection. Of the thirty-six single-flowered varieties above mentioned, five were sent out by the well-known Ghent house of Louis Van Houtte, named respectively—1, P. E. de Puydt; 2, Leopold II.; 3, Edmond Claus; 4, Adolphe Dubois; 5, Pearcei vitellina. Of these the first is certainly one of the handsomest and most distinct of all the new varieties of this year, being of extremely vigorous habit of growth, and producing in great abundance immense flowers of the finest substance of a somewhat lighter shade of blush than Lemoine's Diamant, but opening much more than those of that variety, their only fault being that their footstalks are not sufficiently strong to hold them in an upright position, so that, unless supported by forked sticks, they are apt to fall about over the plant; otherwise, this would be incontestably a first-class variety, and will still doubtless be much admired and sought after by many.

Leopold II. is almost, if not altogether, identical with Fontaine's Lelia of last year, so need not be added to any collection where that beautiful variety already is. Edmond Claus is a variety of considerable beauty and merit, of a spreading and branching habit of growth, and producing medium-sized flowers, much resembling in shade of colour those of Lemoine's fine variety of this year named Charles Baltet, but smaller in size than the blooms of that variety, though perhaps a little more brilliant in shade. Adolphe Dubois is a pretty variety, producing freely creamy-white blooms rather under the medium size, and with a reddish shaded outside to the petals; its habit is good, and its merit about second rate. Pearcei vitellina is of low-growing and spreading habit of growth, producing dark green, pointed, and deeply-marked foliage, like its parent Pearcei, and medium-sized, deep orange flowers, the females, however, being wretchedly thin and poor in shape; and, except for its novel shade of colour, this variety has hardly any merits to recommend it.

Herr Otto Frœbel, of New Münster, Zurich, sent me four varieties, named Monte Rosa, a fine, strong-growing, tufty-habited variety, with well-formed blooms, of good substance, and of a pleasing blush shade of colour. Solfatara, a variety which, when good, is very fine indeed, of extremely vigorous habit of growth, and producing in great abundance large, well-formed blooms of a clear primrose yellow, a great acquisition; it seems, however, to vary greatly, as out of three plants, all growing in the same bed and all received direct from the raiser, only one is really fine, the second having smaller-sized blooms of a paler shade of yellow, and being decidedly less vigorous in growth, and the third producing blooms of a washy-whitish hue, and being altogether worthless. The same variation also appears in this raiser's Mont Blanc, which is sometimes almost pure white and sometimes of quite a rosy-blush tint, but usually in this latter state of such wretchedly delicate habit of growth as to be quite worthless. Memoria Van Houttei is a seedling apparently from diversifolia, which it much resembles in colour of foliage, but it is of much more close and tufty habit of growth; the blooms are small and poor and of a deep carmine shade of colour; but as it drops all its male blooms unopened when grown in the open air, it can only be of any use for greenhouse culture. Orange is small, poor, and altogether worthless.

M. Victor Lemoine, of Nancy, sent me four new varieties this year, and I may also describe a fifth, which failed to bloom for me last season; they were John Laing, a very fine variety, with vigorous but compact habit of growth, and producing, on stout footstalks well raised above the foliage, an abundance of finely-formed cupped blooms of a clear light red and of excellent substance. Raphael de Smet, certainly one of the finest, if not the best, of this year's novelties, of most vigorous and branching habit of growth, and producing an abundance of immense blooms of a fine, deep, rosy-purple shade of colour on long footstalks, and perhaps, individually, the largest of any known Begonia; this should be in every choice collection. Charles Baltet, a lovely variety, of open, spreading, branching habit of growth, and producing large, well-opened, deep crimson blooms closely resembling those of Van Houtte's Edmond Claus above described, but of larger size and finer substance. Charles Boinet is apparently quite a worthless variety. Trophee.—This is a most strikingly beautiful and also a most curious variety of low and tufty habit of growth, with dark, glaucous foliage, and altogether much resembling in habit the Jules Janin of the same raiser. This variety produces only female flowers in a perfect state, but these are of immense size and substance, and of a most lovely and glowing shade of deep carmine, and they are produced on short, stout footstalks in pairs, each pair having between them an abortive male flower without any organs whatever, and usually enveloping the bases of both female flowers somewhat in the manner of a Hose-in-hose Primrose. Altogether a fine and exceedingly interesting variety, well worth cultivating.

M. Lequin, of Clamart, sent three varieties, of which Rosea grandiflora is a very fine kind, of compact habit of growth, and producing fine, large flowers of great substance and of a most pleasing shade of light rose colour. Madame Malet and Mdlle. E. Lequin are both of branching and low-spreading habit of growth, with smallish blooms, which are creamy-white within and of a reddish tint outside. They are hardly distinguishable one from the other, save for some slight variations in the foliage, and are certainly of not more than second-rate merit.

M. Nodot's Cecile Gente is a small, whitish-flowered variety, of good, upright habit of growth, but of no other merit whatever.

M. Jacob Maquoi's Monsieur Dieudonné Massange resembles Van Houtte's Paul Masurel with rather smaller blooms, but has little, if any, new or fresh merit.

Messrs. Thibaut & Ketteleer, of Sceaux, sent one variety named Brillant, a name which it well deserves, as it is really a very fine and most striking variety, of completely upright and densely compact habit of growth, resembling a pillar, and producing all over it an abundance of fine large flowers, all of which are males and of a most brilliant shade of scarlet; this should be in every collection, being specially adapted for a specimen plant.

M. Bertier-Rendatler, of Nancy, sent one variety, Dr. Savouret, of only indifferent merit, much resembling in colour Vincent's Reine de Bougival, but by no means so free blooming.

M. J. B. A. Deleuil, of Marseilles, sent five varieties, of which Le Phocéen is an exceedingly beautiful one, of first-rate merit, with immense flowers of a novel and beautiful shade of deep rose, produced with great freedom and of a vigorous and branching habit of growth. M. Rougié Sarrete is said to be sweet-scented by its raiser, but whether the sun in these parts was not powerful enough to develop this peculiarity, or the plant was not strong enough, I failed to perceive any perfume whatever, but may perhaps be more fortunate next year when the plant gets stronger. Multicolor is dull and of no merit whatever. Danae unfortunately failed to grow with me at all, so its merits, whatever they may be, must be discussed among the next lot. Misteca seems by nature especially tardy in starting into growth, not showing any signs of life till the end of August, and only forming a small plant too weak and late in coming to maturity to bloom this season, so must, like the last-named variety, be described among the novelties of 1879.

M. Crousse, of Nancy, sent two varieties—Julie Chaimbault, a deep rose-coloured variety of no special merit whatever, and Helleboriflora, a low-growing, tufty-habited variety, producing an abundance of smallish flowers, the interiors of which are pure white, but the outsides have a reddish rim round the edge; a rather pretty, but hardly more than second-rate variety. It was, however, very pretty and continuous blooming when lifted into a pot for the greenhouse.

Herr Ernest Benary, of Erfurt, sent five varieties, of which Ne Plus Ultra, though decidedly an exceedingly distinct and fine variety, yet, I think, hardly deserves its very pretentious name. It is of erect and widely-branching habit of growth (as most accurately represented in a finely-coloured lithogram, prepared and distributed by the raiser as an advertisement of his plant); the male flowers are of very large size, and of a deep shade of scarlet, very pendulous in habit. This variety is also said to reproduce itself absolutely true from seed. ORANGE PERFECTION certainly does not deserve its name. DEFIANCE is a fine, vigorous-growing plant, producing medium-sized flowers of a deep scarlet shade. FLORIBUNDA ROSEA is also a vigorous, tall-growing variety, producing good-sized and well-shaped blooms of a pleasing shade of deep rose colour. MONT ROSE is a somewhat less vigorous grower, producing medium-sized blooms of a deep pink.

Messrs. Veitch, of Chelsea, sent two varieties, MONARCH and QUEEN OF THE WHITES, the former of which is a vigorous-branching habited grower producing freely fine medium-sized blooms of a brilliant shade of scarlet. The latter, originally found as a chance seedling among a pot of B. rosæflora, is incontestably the purest white that has yet been sent out; it has also this curious difference from its parent, that whereas that is exceedingly shy to bloom, this is very free-blooming indeed, quite small plants producing three and four good stems bearing three blooms each. The foliage is of the distinct round and corrugated form peculiar to rosæflora, and the flower stems rise as in the case of B. Veitchi direct from the tuber, the plant being entirely stemless, and only, therefore, increasable by seed or root division.

M. J. Vincent, of Bougival, sent one variety, named JAUNE SERIN, of low-growing and compact habit of growth, with hairy stems of a most free-blooming character, and producing medium-sized blossoms of a clear, pure, canary yellow. It well deserves its name, being one of the prettiest varieties that has yet been sent out, but from its extreme floribundity it affords but very few cuttings, and will consequently be slow to increase.

Only three new double-flowered varieties flowered with me this season, all raised and sent out by M. Victor Lemoine, of Nancy, and named respectively MARIE and EMILE LEMOINE and ORNEMENT. The first-named is decidedly the largest-flowered and most fully double of any variety yet sent out, the fully-developed male blooms resembling more those of a Hollyhock with several flower facets than those of a Begonia; it will also by many be considered the most beautiful, though some will, perhaps, prefer the fine glowing scarlet of Gloire de Nancy, which it most resembles in shape. Its colour on opening is pale rose, usually with a white centre, but, as the flower develops, the white fuses into the rose colour, which assumes rather a deeper tint. It is so extremely free-blooming that the plants do not grow to a large size, but when cuttings can be obtained they root freely, so that this very fine variety should soon become plentiful, and be included in every choice collection. As in Gloire de Nancy, so with this variety; the double flowers largely preponderate in number over the female singles. Emile Lemoine resembles in habit of growth and shape of blooms the first double variety sent out by M. Lemoine, and named after himself Lemoinei, but it is rather a stronger and more vigorous grower, and the colour is two or three shades deeper red than Lemoinei; the double flowers are usually rather thin in the centre when fully developed, and, compared with the exquisitely beautiful last-named variety, this can only be called of, at most, second-rate excellence, though its fine, deep colour and freedom in producing its blooms will, doubtless, find it many admirers. Ornement is a charming variety of low and tufty, compact habit of growth, and producing an abundance of flowers of a clear, pale rose colour, the males of which, though, for the first month or six weeks of the season after being bedded out, are only semi-double, and occasionally drop in a bud state unopened; still, as the season advances and the plant increases in strength and vigour, they lose both these faults and become fully and most beautifully double.

M. Van Houtte, of Ghent, sent out this year his first double-flowered variety named Charles Rogier, but though I got a couple of tubers at the commencement of the season, one did not grow at all, and the other not till too late to bloom this year. Among the five novelties to be sent out next season by this house is the first double yellow, as yet unnamed, which should be a great acquisition.

W. E. GUMBLETON.

Autumn-planting Gladioli.—I am pleased to see Mr. Fish taking up the subject of autumn-planting Gladioli (p. 460); I feel convinced that being out of the ground is very injurious to their well-being. If the bulbs were planted rather deeply in the first instance, there would be no necessity for taking them up every year, as they would be beyond the reach of anything like frost to hurt them, even supposing we experience a severe winter. If cultivators of Gladioli were to try this plan, they would find that these showy flowers would prove much hardier than it has hitherto been thought they were. The bulbs forming above the previous year's bulb naturally tend to come nearer the surface; nevertheless, it would be unadvisable to plant too deeply. Of course, if in unsuitable soil, the safest plan is to take them up and keep them in dry earth or sand.—J. S. T.

SELECT SPECIES OF PENTSTEMON.

MANY valuable introductions have of late years been made to the list of cultivated Pentstemons, principally through the instrumentality of Mr. Thompson, Ipswich, and we know that many more still exist in the rich storehouse of the Far West waiting to be introduced. Within the past few years much has been done also in regard to the improvement of the Pentstemon by judicious selection of seminal varieties of the old P. Hartwegi and P. gentianoides, which, though they possess a wide variation in colour, lack the beautiful clear blue which we find in some of the species, and therefore have a somewhat monotonous effect. These garden varieties, or so-called hybrids, may be ranged under two series of colours—those from P. Hartwegi belonging to the red-flowered set, and those from P. gentianoides to the purple-flowered class; and, strange to remark, these series of colours will be found to run strictly parallel with other structural peculiarities. As regards culture, the species have, unfortunately, gained the reputation of being somewhat difficult to manage, as some, especially those of the shrubby section, show a remarkable tendency to suddenly die away when apparently they are in robust health. In order to ensure ordinary success, thorough drainage of the spot in which they are planted is a primary consideration, as it is a well-known fact that these, as well as a host of other Californian plants, suffer more from excessive moisture at the roots than from the coldness of our winters. The soil which I find best suited for all Pentstemons consists of good friable loam with an admixture of well-decayed leaf mould and sharp sand. It is specially advisable in the case of Pentstemons to have, in addition to the border specimens, a few plants in cold frames, in order to be able to fill vacancies, should they occur. They may be propagated either by means of cuttings or seeds. The former mode applies chiefly to the shrubby kinds, which strike freely in spring; and in favourable seasons seeds are freely produced from those from which it is not practicable to obtain cuttings. The following is a descriptive list of a few of the best kinds :—

Palmer's Pentstemon (P. Palmeri) is undoubtedly one of the finest yet introduced. When well grown it attains a height of 4 ft., and even 5 ft. It has stalked, oblong root-leaves, very glaucous and sharply and irregularly toothed; the stem-leaves are somewhat heart shaped and stem clasping. The flowers are produced abundantly, and form a stately, pyramidal head, each blossom being about 1½ in. long, with a much-inflated tube, contracted at the base and with a wide, spreading mouth. The colour of the two upper divisions is almost crimson, the tube and the other divisions are of a much paler hue, and each pencilled with a distinct purple streak. It flowers about midsummer, and forms one of the most effective hardy plants with which I am acquainted. It is a native of Arizona, and is also found at considerable elevations on the West and East Humboldt Mountains, Nevada. We may therefore reasonably expect it to be as hardy as many other kinds from that region. It is of rather recent introduction, hence its comparative rarity in gardens, but when better known it will inevitably become as popular a favourite as it richly deserves. It was introduced by Mr. Thompson.

Cobæa-flowered Pentstemon (P. Cobæa) is one of the handsomest of the yet introduced kinds. It grows about 2½ ft. high, and has broadly ovate and sharply-toothed root-leaves, the upper ones somewhat heart shaped and stem clasping. The flowers are very large, being nearly 2 in. in length, with a much-inflated tube and a spreading limb about 1 in. across. The colour is pale purple distinctly pencilled with red streaks and delicately suffused with yellow, with the base of the tube of a creamy-white. They are freely produced in long, leafy racemes late in autumn. As well as being one of the most beautiful, this is one of the rarest of Pentstemons. It may, however, be found in several collections of hardy plants near London, and thrives vigorously and generally quite unprotected, but it is very difficult to propagate in quantity. It does service in trade lists for several spurious kinds, but it can be readily recognised when in flower by the above brief description. It is a native of the interior of Texas, and was introduced about forty years ago.

Blue-flowered Pentstemon (P. cyananthus).—This, though considered by some to be a variety of P. speciosus, is, however, for horticultural purposes very distinct and a most lovely kind. It is of erect growth, attaining 3 ft. to 4 ft. in height, with the root leaves broadly ovate and pointed, the upper ones stem-clasping and variable in size. The flowers form dense spikes 1 ft. or more in length, composed of short stout stalks, bearing clusters of flowers

1½ in. in length, with the tube of a reddish or purple tinge, and the spreading divisions of a bright azure-blue colour, rendering it one of the most showy kinds in cultivation. It flowers in May and June in favourable seasons. It inhabits the upper valley of the Platte River, in the Rocky Mountains, and was introduced from thence to our gardens in 1849. The newly-introduced variety Brandegei is a decided improvement on the type, being of a more robust habit, and its flowers brighter coloured.

Azure-flowered Pentstemon (P. azureus).—This is a well known and very effective dwarf kind with numerous erect branches; the lower leaves are somewhat heart-shaped and broader than the upper ones, which are narrowly lance-shaped, and all have smooth edges, and are slightly glaucous. On the upper half of each branch are borne in a crowded, racemose manner the numerous blossoms so arranged as to appear in whorls, being nearly stalkless. The blossoms are rather large, and of a clear, violet-blue colour, which is much deeper in the divisions than in the tube. It was introduced in 1848 from the Sacramento Valley, in California, where it was found in dry river beds, and also at considerable elevations on the mountains in the vicinity. It begins to flower with us towards the end of summer, and continues to produce its blossoms for a considerable time.

Variable-leaved Pentstemon (P. heterophyllus).—This sub-shrubby kind is related to the preceding, being of dwarf habit and having numerous branches. The leaves are rather glaucous, the lower ones being from 2 in. to 3 in. long, narrowly lance-shaped, the upper ones both short and long. The flowers are produced singly or in pairs from the axils of the upper leaves, and are 1½ in. long, with the tube suddenly narrowed at the base. They are of a pink-lilac colour in the type, but seminal varieties are very liable to vary. It was found and introduced by Douglas in 1834 from California, but was soon lost to cultivation. It was subsequently re-introduced by Hartweg from the valley of the Sacramento River, Upper California.

Pentstemon heterophyllus (Vilmorin).

Jaffray's Pentstemon (P. Jaffrayanus).—This remarkably showy kind is, I consider, the best of the blue-flowered class. The very glaucous, broadly lance-shaped foliage contrasts finely with the bright, clear blue blossoms, which are borne in profusion during the greater part of the summer. Another point in its favour is its rather dwarf and compact habit, a feature generally sought after in select border plants. It inhabits various parts in North California.

Scouler's Pentstemon (P. Scouleri) is a sub-shrubby kind of rigid habit with narrow, toothed leaves; it produces compact racemes of large purple flowers in May and June, and is a native of the Kettle Falls, Columbia.

Diffuse-flowered Pentstemon (P. diffusus).—This beautiful kind formed the subject of a coloured illustration in Vol. X. of The Garden. It is a semi-shrubby kind, from 2 ft. to 4 ft. high, with shining, ovate, and pointed leaves, irregularly and deeply toothed. The flowers, which are about 1 in. long, have the tube and lower divisions of a violet-purple colour, the two upper ones bordered with deep blue, and they are freely produced, forming a large, loose, many-branched head. It flowers throughout the greater part of summer and autumn. It inhabits the vicinity of the Columbia River and other places in North-western America. Its near relative, P. Richardsoni, much resembles it, but is inferior to it in point of beauty.

Showy Pentstemon (P. speciosus) is a remarkably handsome kind, with lance-shaped, slightly glaucous root-leaves, those of the stem being narrow, stalkless and slightly wavy at the margins. The stems grow to 3 ft. or 4 ft. in length, on two-thirds of which are arranged in a whorled manner the many-flowered clusters of its beautiful sky-blue flowers, varying to a reddish hue. It inhabits the banks of the Spokan River, in North-west America, and was introduced by Douglas about fifty years ago.

Shining Pentstemon (P. glaber).—This is nearly related to the preceding, but is of dwarfer growth, with tufts of narrow, spathulate, and shining leaves. The flowers, which are of various shades of purple, are borne in crowded spikes about 1 ft. in length, and are produced early in summer. On account of its short stature it is better suited for rockwork decoration than the majority of the other kinds.

Large-flowered Pentstemon (P. grandiflorus) is an extremely handsome kind, nearly related to the two preceding, growing about 3 ft. high, with shining, oval, lower leaves, those of the stem clasping it and roundish. The flowers, which are large and very showy, being of a beautiful pink colour, are produced from July to September. It is a native of the plains of Missouri.

Murray's Pentstemon (P. Murrayanus).—Besides being specially attractive when in flower, this fine kind, when well grown, is very handsome in foliage, having broad and very glaucous lower leaves, and large, stem-piercing upper ones. The blossoms are narrow and of a bright scarlet colour, freely produced on terminal branches in a racemose manner. It is also a native of Texas, and is now to be frequently met with in gardens.

Centranthus-leaved Pentstemon (P. centranthifolius) greatly resembles the preceding, but has much narrower leaves. It also appears to be more manageable in cultivation than P. Murrayanus, and it is almost as effective.

There are several other very fine kinds that are now tolerably common, and therefore need no description, such as the old P. barbatus and its gigantic variety Torreyi, Campanulatus, &c. Others, again, there are which are rare on account of being of recent introduction, such as the beautiful P. secundiflorus, lætus, &c. W.

ROCKERIES AND ROCK PLANTS.

The rockery, if well arranged, well planted, and well cared for, forms one of the most interesting features of a garden. It need not be large, it need not even be picturesque to inspire interest; indeed, many places are not adapted, from the nature of their surrounding circumstances and localities, for creating and properly displaying bold, picturesque effects. In such cases imitations of natural cliffs or the rugged scenery of Alpine regions are quite out of place. It often happens when we try to imitate the wilder moods of Nature, we fail to grasp the subject from want of study or training; and the result produced is far from satisfactory. Unless the natural conditions be favourable, it will be better, in the formation of rockeries, to adopt some less ambitious scheme than to perpetrate a bad copy of the upheaval of strata in some early period of the world's history. It is comparatively easy to secure the conditions under which the plants we wish to cultivate will thrive in some unobtrusive manner that will fit in almost everywhere. There are, of course, numberless places in a country so varied in surface and geological formation as ours where a natural and most interesting rock garden might be formed on either a large or a small scale in every way adapted for the culture of many species of plants where aspects could be obtained suited to their varied wants both as regards shade, sunshine, or other matters of cultural detail. There are positions in not a few gardens where the natural rock is so near the surface, that a very little labour in excavating would lay it bare, and where it would not be difficult to select some shelving hillside where precipitous cliffs, rude terraces, and winding stairs might be hewn out of the solid rock, and with the displaced fragments might be formed rocky mounds to suit the special requirements of every Alpine or other plant that will thrive in our climate. If a stream of water could be led to the summit of the cliff by an underground channel or a pipe, a very little amount of ingenuity would arrange a graceful and natural descent, illustrating in its course the beauties of cascade, rippling stream, and silent pool. The presence of water in a rock garden of any extent is a great help (I had almost said a necessity). Many Alpine plants love moisture; indeed, I think a lack of moisture in our short bursts of dry, hot weather is one of the main reasons why some of the species are found difficult to cultivate. Where water can be had, the pond for aquatics and the quivering bog for marsh plants may be made specially interesting, and will appropriately find a place in the rock garden, or in its vicinity. Where the rock garden is large, scope will be found for much skill and judgment in selecting and grouping the shrubs, to give elevation to certain points, to deepen the shadows of others, and generally to relieve and give tone to the masses of rock. I think a rock garden should not be all seen from one point of view. The most interesting and pleasing gardens of the kind which I have had an opportunity of visiting had special points of view, where separate and distinct groups of objects could be enjoyed, but, in addition, there were many details cropping up at every turn—here it may be a choice group of Cyclamens near the friendly shelter of some jutting rock; further on, perhaps, a mound of rare Primulas or some equally interesting family, and in the arrangement of the surface, breaking it up into details, if I may so term it, suitable shrub or tree growth must play a prominent part, in proportion, of course, to the extent of the place. The trees and shrubs employed should consist mostly of evergreen species. There may be positions for the Mountain Ash or the Silver Weeping Birch, but the smaller forms of Coniferæ will predominate, and some, like Abies clanbraziliana and A. pygmæa, are especially suited for rockeries on a small scale. The more extensive the rockery the more scope will be given for the creation of scenic effects in the arrangement of the trees and shrubs, both in its interior decoration and also in making backgrounds and boundary lines. The Clematis, the Ivy, Periwinkle, St. John's-wort, Pernettya mucronata, Cotoneaster, Sea Buckthorn, Rosemary, and similar plants may be used in groups of sufficient numbers to give character to particular spots. Arches of undressed stone may in some places be appropriately introduced, but there should in everything be a certain easily recognised fitness or necessity for whatever is employed, otherwise such things have a grotesque appearance. Thus an arch may be employed to span an entrance to the rock garden, or to form a connection between two groups of rocks on each side of a path that seems to require the existence of an arch to finish the group. Arches should be clothed with wall plants, of which there are many species that will grow on rough stones with but little more food than is supplied by the atmosphere. A creeper or two should be planted in addition to help to clothe and so reduce its conspicuous proportions. Shady positions may be created for Ferns and other plants that love shade, and the Alpine peak may also be introduced, if desired, clothed with suitable vegetation, gradually diminishing in stature from the base upwards, till the summit is lost in perpetual snow, which may be represented by the white-leaved Antennaria.

In small gardens or elsewhere, if there be no scope for the creation of picturesque scenery without offending correct taste in such matters, it will be better to strive only to make the position as suitable as possible for the plants which it is intended should be cultivated. This, of course, should not be lost sight of, but it often is when seeking to copy from Nature in any arrangement or grouping of stones for the production of scenic effect. Beds for Alpine plants should have an open, airy situation. Every beginner, no matter how much he may have previously read or studied, will find that practically he has much to learn, especially in the culture and management of rare kinds of plants. The latter have their whims and fancies, and some Alpine gems that grow like weeds on the bleak mountain side will not take kindly to every place, no matter how much care or pains may have been taken with them. The best kind of knowledge is obtained by direct experiment, and all who excel in anything must have laid the foundation of their skill in that way. A rockery on a small scale may be created, in every way suited for the cultivation of what are termed Alpine plants, by raising mounds of good soil and partly covering the surface with stones, vitrified bricks, or clinkers. The largest pieces may be partially bedded in the soil. When the stones, or whatever materials used, are satisfactorily arranged, the cavities between them should be filled up with good soil to suit the different plants. Equal parts of loam and peat will suit most of them, but for some species a larger proportion of peat should be used, and fragments of stone or gritty matter should be mixed with it to keep the soil open and to secure efficient drainage. When the mound or bed has had time to settle, the planting may be commenced, and it is now that some knowledge of the antecedents and habits of the different species is desirable, in order to select proper and suitable sites, to give the small, delicate species a sheltered nook on the lee side of some large stone, and to plant the strong grower near the base of the work, where it cannot overhang and smother up its weaker neighbour. There are some kinds that delight to grow on a rocky ledge and overhang its outward face. Some love shade, and may be planted where some shelter from the sun's hottest rays can be had; others, again, love sunshine, and will revel in its fiercest beams.

After all that may or can be written or said on this subject, there is no royal road to the acquisition of this or any other kind of special knowledge, and there is no better way of becoming actually acquainted with Alpine plants and the best mode of cultivating them than by commencing with a small collection, and as one's knowledge and interest increases to keep adding to it; and as beds or mounds of Alpine plants need not assume any geometrical plan, we can add a bed or two any time we may think proper to do so. In this way we shall have time to become acquainted with all our favourites, to keep a close eye upon each, and if one looks unhappy to ascertain the cause and supply the remedy; indeed, the plant itself, if the symptoms are intelligently studied, will supply all the information we require to form a correct estimate of its condition. Planting Alpines on raised beds or mounds is a much more interesting way of cultivating them than in the level border, even in the case of such kinds as succeed under ordinary border culture. In the first place they are brought nearer the eye; study is made more easy and interesting; and in the periodical digging and hoeing of borders many choice plants are often seriously injured from want of care. Then, again, in winter it is the constant damp rather than the cold that injures the natives of the snow-clad regions, and on a well-drained mound of rockwork this source of danger would be mitigated or altogether removed. E. Hobday.

Sempervivum fimbriatum.—Few readers of The Garden will probably be acquainted with the fringed Sempervivum. I met with it in the Tyrol in the autumn. It may be said to be fringed and ciliated throughout all its parts—rosette leaves, stem leaves, and perianth. The flowers are in a close corymb, greenish-yellow in colour, and bell-shaped, and the segments of the perianth are fringed with processes at the tip, much after the fashion of our Menyanthes. I found it on the green-slate formation, or, to be more strictly correct, where the green-slate and micaceous clay-slate converge. It is a rare plant in the Tyrol, and, in corroboration thereof, I may state that Hausmann had no personal acquaintance with it when he published his "Flora of the Tyrol." If it had but the vivid colouring of our Alpine Sempervivums—such as montanum and arachnoideum—it would soon meet with attention. As it is, its shaggy dress and bell-shaped flowers form its chief attraction. There are two other still rarer species in the Tyrol that have more or less of shagginess, but Sempervivum fimbriatum, or hirtum, as it is also called, carries the palm.—Peter Inchbald, *Hovingham Lodge, York.*

Bouvardias Planted-out in Summer.—Whatever differences of opinion there may be as to the way in which these useful plants may be grown, there can be no doubt that good plants can be had by planting them out during the summer months. The best Bouvardias I ever saw were a quantity grown in one of the London nurseries in 1877. They were planted out and lifted in September, fine strong plants, ranging from 6 in. to 18 in. through, plants that would satisfy even an enthusiast. My own experience this season confirms the foregoing remarks; on some plants so treated there are from twelve to twenty good heads of bloom, and they have never been in a higher temperature than 55° (fire heat) since they were out of the cutting pots. Why, therefore, should we grow Bouvardias in high temperatures, when good plants of them may be grown as just described? They possess two advantages over those grown on the warm system, viz., they require less labour, and the blooms last longer in good condition, both in a cut state and on the plants, rendering the latter better adapted for conservatory or house decoration than they otherwise would be.—J. C. F.

CALYSTEGIA SYLVATICA.

Among the plants dangerous for the garden, but too beautiful to be thrust out of it, are the two varieties of the large climbing Bindweed (Calystegia sylvatica). No plants form more beautiful and delicate curtains of foliage and flowers, and none grow more vigorously in any soil. The wild garden is the place where these are most at home, and where their vigorous roots may ramble without injury to other things. Among bushes or hedges, or over railings or on rough banks they are charming, and take care of themselves.

Calystegia sylvatica,

LILY CULTURE.

In a previous paper I made a few remarks on the all-important functions of the bulb and the roots in relation to the nourishment and growth of the Lily, and among other things I said: When the flowers of the blooming plant begin to fade, it is a true sign that the roots of that bulb have done their work, for they also will be found to be decaying, if not already dead. The scales of that bulb, having expended all their elaborated sap on flowering and seeding, will also be decaying, though they will not, in many cases, dry up and altogether vanish for some months to come. The cause of this retardation in the decay of the scales of the dead or parent bulb, I will now, as a continuation of my reply to Mr. Dod (p. 433), proceed to explain, as nothing has tended more to mislead Lily growers than this very part of our subject. It is this, in fact, that has mislead some very intelligent cultivators, and has induced them to say that when repotting they have never discovered traces of a decayed old bulb, and it has also been the principal cause of making many believe that the plant is a perennial. If we take up a newly-imported L. auratum bulb, the question is, what do we hold in our hands? Answer—The bulb of the past season, or parent bulb, which died soon after the flowers faded, but which is still preserved in a rough state by the persistent walls of the empty cells. I have said in my last paper that these cells, where the sap is stored up and elaborated into nourishing matter, number not less than 300,000,000 in a medium-sized L. auratum bulb, and that, in fact, the whole life of the plant is that of the cells which compose it, for in them and by them its products are elaborated, and all its vital processes carried on. If, therefore, the cells number 300,000,000, we must have 300,000,000 of cell walls, composed of what is called cellulose or cellular tissue. These cell-walls which make up the tissue or fabric of the bulb, and which remain unaltered, and perform some offices long after life has departed, are composed of three elements—carbon, hydrogen, and oxygen, and are insoluble in water. The epidermis, or external skin of the bulb scales, consists of one or more layers of empty, thick-walled cells, cohering so as to form a firm and close membrane, preserving to a certain extent the shape of the scales and apparent bulk of the bulb, though after the nourishing matter in the cells has been exhausted, the scales contract somewhat in their interior, and consequently open wider apart from one another, like withered Fir cones, as we see when we examine imported bulbs. In such a case the roots of the parent bulb are dead, and the bulb itself is dead. If this be doubted it is easily proved. Cut any of the scales into thin slices and place them under a microscope. It will then be seen that not a vestige of elaborated sap remains within the cells, in consequence of their having been completely emptied of their contents when the flowers faded.

Lily Roots.

With regard to the roots which we see attached to imported bulbs, they do not belong to the parent bulb, but to the new bulb, which is within the parent bulb; but they are of no use, as it is impossible to lift a bulb out of the ground, even only two or three weeks after the flowers have faded, without depriving the main or new roots at their extremities of all that is most valuable. I have said: If a Lilium auratum bulb be planted in congenial soil, it will prolong its roots to a great depth, and these roots will branch out into numberless rootlets, and these rootlets into fibrils covered with innumerable root-hairs (seen under the microscope but not by the naked eye), which increase to a very great extent the absorbing surface, especially if the soil be deep, free, and friable. The minute fibrils of the root, near the lowest extremities, are those which are chiefly concerned in taking up nourishment from the soil. The thicker parts near the bulb are, comparatively, of no value for this purpose, for as the lower delicate parts spread and elongate deeper into the soil, the thicker parts, becoming older, a kind of skin or epidermis is formed on those parts, through which absorption does not take place freely. These multiplied fibrils, though invaluable, are nowhere to be seen in connection with the roots of imported bulbs, nor, in fact, in connection with the roots of any bulbs lifted late in the season; for they are of so delicate and fragile a nature, that they give way to the slightest pressure in lifting the bulb, necessitating the growth of an entirely new set of roots before the new bulb can send up its stem, thus retarding the blooming season, as well as impairing in quality the bloom of the next season—the source of many complaints on the part of those who cannot account for such Lilies blooming worse in the first than in the second season. The Japanese are reported to be very clever Lily growers; but they are much too clever in some things, especially in their treatment of the bulb and its roots. Not knowing the change of character in the bulb scales in the autumn, "they take the bulb out of the ground or pot soon after the stem has withered, and remove all the roots. It is then exposed to the air about ten or fifteen days and replanted sideways, in order that the water may not lodge between the scales, which might be the case if the bulb were placed upright." This idea of planting a dead bulb (which they no doubt think is alive) with so much care, might be looked upon as something ludicrous, were it not that this method has been imported into this country, and has found many imitators, greatly to the hindrance of real progress in Lily culture. Just fancy this dead bulb being planted sideways to prevent water from lodging between the scales, when I have this moment explained that the skin of the scales is composed of a material "insoluble in water," and to which water can do no harm. Besides, in planting the dead parent bulb sideways, they also plant the new bulb, within it, in the same position, making it absolutely necessary that its stem and roots should start horizontally, depriving the bulb, unnecessarily, of a certain degree of strength, before the stem can be made to rise up, or the roots to turn downwards. We are also furnished with many other examples (which easily find imitators) where the greatest care is taken of the old decaying bulb, without a thought being given to the new bulb within it, the only vital part, and the only part, too, that will bloom next season, if not destroyed, because it happens to be out of sight, unless sometimes at its very apex. We are told also that the best houses in the trade in this country, send out their Lily bulbs "with all their roots intact," packed in damp Moss or other material. This is simply a work of supererogation; for these roots, being the roots of the new bulb within the old or or parent bulb (not the old roots) must die; and, therefore, their extremities being destroyed, it would be much better to prune them off at once to within 1 in. or so of the base of the bulb. This applies equally to Lily collectors when sending bulbs to this country.

When are Lily Bulbs at Rest?

Mr. T. Baines (p. 433) in opposition to my teaching says: "The decay of the old bulbs and formation of new ones internally, is nothing more or less than what takes place in all bulbous-rooted subjects. In the case of all the scale-formed ones Nature effects her work much in the same manner—that is, a greater or less gradual throwing off and decay of the outer portion." Now, whatever Mr. Baines may mean by introducing "all bulbous-rooted subjects" along with the Lily, I know not, but this I do know, that with regard to the Lily itself he is altogether wrong. If he had paid attention to the natural economy of Lily growth, he would have seen that there was no such thing as "greater or less gradual throwing off and decay of the outer portion." He adds: "'Dunedin's' recent teaching has the misfortune of neither according with theory nor practice." Let us see if Mr. Baines' knowledge of the subject is more profound. He says, "If you do anything to any plant of these (L. speciosum and L. auratum) or such as are of a like nature, that shortens the duration or hastens the decay of the leaves before their allotted time, you inevitably weaken the plants." This I deny. I entirely agree with Mr. G. F. Wilson that "Lily bulbs should be moved when most at rest." The question then is, when are they most at rest? Not, certainly, as Mr. Baines says, "as soon as ever the leaves have decayed and fallen off naturally." It has been proved beyond a doubt that soon after the flowers of the parent bulb have faded, the roots of that bulb having done their work, will be found to be decaying, if not already dead. The scales of that bulb will also be decaying, though they will not in many cases dry up and altogether vanish for some months to come. The cause of this I have already explained in this same paper. We have, therefore, now only the stem to dispose of. If Mr. Baines had carefully examined the stem at its junction with the bulb, he would have found that it was much contracted and dried up, compared with what it was above ground. If he had cut off the stem close to the bulb, and had placed a slice of that part of the bulb under a microscope, he would have seen that there was not a single particle of elaborated sap in it, for this reason, that the cells of the bulb were completely emptied of their contents soon after the flowers faded. It is thus that Nature has laid it down as a law, that as soon as the cells are emptied of their contents, the whole of that plant perishes, leaving it to the new bulb to carry on the succession untrammeled by anything that has gone before. Further, if, at this time Mr. Baines had carefully removed the bulb away, without disturbing the stem, he might have planted that bulb in a pot or in the open ground with the very best prospect of an early and superior bloom from the new bulb next season. It is thus that Nature has decreed, that, as soon as the bloom is over, all nourishing connection between the bulb and the stem must cease. As regards the stem that would be left standing, it would have gone on keeping green for some weeks longer, its nourishment being supplied by its own stem roots. This is no mere theory, but a description of simple experimental facts which have been repeated over and over again, and no longer ago than last September in the case of L. speciosum, and October in that of L. auratum. Green leaves on the stem are no proof whatever that vitality exists between the bulb and the stem. It is simply a proof that those particular stems have a tendency to throw out stem-roots, and that those roots, from the nourishment they draw from the soil, assist for some time in keeping the leaves green. It is therefore clear that Mr. Baines has formed a one-sided theory from "L. speciosum and L. auratum, or such as are of a like nature." He, in fact, acknowledges as much, for he says: "I have not grown nearly all the Lilies now in cultivation." Had he done so, he would have seen that the leaves of those which send out no stem-roots "decay and fall off naturally" soon after the flowers have faded, simply because they have no stem-roots to keep them green.

Stem Roots.

In reply to "London Stone" (p. 434) allow me to inform him, with regard to his question about the increase of Lilies, that during this last season I lifted and replanted more than 200 bulbs very soon after the different kinds went out of bloom, and I gathered from them many more bottom-root offsets and small bulbules than I (as an amateur in a suburban garden) could make use of. As to seeding, I leave that to the trade, for this reason, that the new or successional bulb gains in strength and size by not allowing the plant to run to seed. With respect to the mop-like growth of his L. auratum, it is a very bad sign indeed, but more common in pots than in the open ground. Some think that the stem roots assist the plant at the time of flowering, but those who entertain such ideas are unacquainted with the fact that bottom and stem roots—below the bulb called primary, and above the bulb called secondary roots—are composed of a different tissue or organization of parts, and that their absorbing powers are of a totally different character; and, moreover, that the sap drawn up by stem roots has no assimilated flower nourishment in it. In the beginning of last October a nurseryman sent me six pots for inspection. They were 6-in. pots, and in each pot there was a L. auratum bulb just out of bloom. The stem roots in thousands literally made a frightful exhibition. They had run over the edges of the pots, they had also run down the inside, twining themselves in and out among the bulb scales, completely exhausting the soil, and, cannibal-like, sucking the sap from the new bulbs to such a degree as to leave them not the sixth part of the size they should have been. A friend, an amateur Lily grower, happened to call at the time and saw them. As to the mop-like growth of the stem roots being "admirable protection" to the bulbs: as this is mere theory, I can only advise "London Stone" to look upon them as his greatest enemies if he desires to have a good bloom the following season. His "strong garden soil" (evidently too strong) had, no doubt, a great deal to do with the luxuriant growth of his stem roots, and, therefore, he should bear in mind that stem roots are not the normal condition of the genus. There are some species that send out no stem roots, there is a large number that send out but few, and there is a smaller number, like L. auratum, that send out large quantities, provided they are encouraged so to do, by rich soil and top-dressings, or, in other words, by uncongenial soil and misdirected cultivation. As "London Stone" thinks that my views on the subject of stem roots are erroneous, I may tell him and others that I build up no theoretical views whatever, but simply endeavour to explain, to the best of my ability, what experimental researches have placed before my eyes.

If "A. S. O. N." and "J. S. W." (pp. 460—461) will be kind enough to put to me any distinct and definite questions, without being enveloped by extraneous matter, I shall be happy to answer them to the best of my power. But, above all things, let them say whether they believe in the perennial theory or in the successional bulb system; for, without knowing the exact ground upon which we stand, we may be spending time in working at cross purposes.

Dunedin.

ISOLATED PLANTS IN PLEASURE GROUNDS.

Perhaps no one branch of ornamental gardening more requires the exercise of taste and judgment than does that which deals with the isolation of single plants. Beautiful as fine-foliaged plants are when massed, and necessary as this arrangement may be to insure in certain situations effects of an imposing description, we yet turn with relief and renewed interest to a single finely developed specimen. Room to grow and spread in a free unrestrained manner is what every species of plant requires before it can fully display its full decorative capacities. Many fine-foliaged plants, indeed, utterly fail to give any adequate idea of their true worth and beauty when crowded together. In such plants as the Ricinus, the Wigandia, the Acanthus, the Palm, we lose the distinctive leaf beauty and characteristic growth which distinguishes each kind if planted in formal ranks or crowded groups. Yet, pleasing and picturesque as is the effect of isolated plants upon stretches of verdure, it is a fact that it is very easy to overstep the mark and defeat the end in view, by creating monotony where diversity really is sought for. With many the practice of dotting a plant here and there becomes a passion, and the turf is eventually so studded with large and small specimens that there remains scarcely any free open expanse of verdure. In large places there is of course great scope for thus utilising our finer forms of ornamental-foliaged and flowering plants; but in places of a comparatively small area isolation must be confined to very narrow limits, or the effect will be the very reverse of pleasing; and those plants which are to be isolated should be so placed that their full outline comes easily under the eye, for they should never be made the means of obstructing the view of other portions of the pleasure grounds. When placed in the centre of the lawn, the effect of such plants is too often obtrusive and glaring; whereas, standing in the proximity of, and backed up by, dense and taller-growing subjects, and yet far enough away to insure plenty of light and sun, the effect is one of a most satisfactory description. The gradations of light and shade and the diversity of growth and leafage, as exhibited by woodland scenery, are here fairly imitated. The isolated plant thus indicates the termination of the forest—the point where the vegetation ends and the open prairie commences. Such effects as I have here sought to convey may be easily seen in parks or on unreclaimed lands, where pieces of wood alternate with open breezy expanses of grass or common. We there see small trees and clumps of undergrowth straying away, as it were, from the main body, yet still near enough to remain within its influence and shelter. The open glade comes up to this lower growth, and runs in amongst it, reaching up here and there to the very stems of the larger trees, thus affording little scenes of a charming character. Such natural effects may be easily introduced into our gardens, even into the smallest. We have only to choose suitable subjects, and arrange them according to the space at command. Those who have but small gardens may recollect that it is really not the number of specimens which constitutes the charm in this method of planting, but the state of perfection to which each one is brought by careful culture. Half a dozen suitable subjects judiciously placed, and well attended to, will reflect more credit upon the grower, and afford greater satisfaction, than an indiscriminately arranged plantation of half-developed plants. J. Cornhill.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Hardiness of Lycopodium denticulatum.—This has been growing out-of-doors here in the hardy Fernery for two years, and it looks equal to any which I have seen coddled up indoors. Associated with Ferns, Sedums, Saxifrages, &c., on rockwork, it is simply exquisite.—D. S. Gillett, *Weybridge.*

Stellaria graminea aurea as an Aquatic.—This little golden Chickweed makes one of the prettiest aquatic plants for small lakes, where the water is clean, that can possibly be found, and it is also one of the easiest to cultivate. All that is needed is to put bits of it in the water and to make them to sink to the bottom; no pot or soil is required. They will soon start to grow, and in a few weeks will reach the surface. Treated in this way the leaves are twice the size of those grown in the flower garden.—W. Whiting, *Shot Tower, Newcastle-on-Tyne.*

Callas Out-of-doors.—Three years ago I flowered Callas in a shallow pond, where I thought they would be permanent, but, to my disappointment, after the first season of blooming, in the month of July, they gradually decreased in size, and ultimately died. I may mention that the pond was supplied from the River Thames.—D. S. Gillett, *The Heath, Weybridge.*

Bulbs Wintered Out-of-doors.—After ten years' experience I am assured that Snowdrops, Crocuses, Hyacinths, and even the Gladiolus do better left in the ground than lifted, provided sufficient nourishment be given to the roots without disturbing them. Never had I finer blossoms than some which I had from bulbs that had been planted four years, and they were nearly as early as those from forced bulbs, nor, except in the case of an unusually severe winter (or rather severe early spring) can such bulbs come to harm.—E. E. P. Legge.

Brick Edgings.—For an edging suitable for any position where a neat and durable one is required, few of the ornamental tiles look so well, or are able to stand wear and tear better than ordinary building bricks. If these be neatly laid at first, sloping to the walk so as just to show the 4½ in. face, they will look as well after twenty years' wear as they do the day on which they are laid, as moss or any growth adhering to them is easily removed when the walks are hoed. For shrubbery walks under the drip of trees, where live edgings are an impossibility, edgings of this kind will be found very satisfactory, combining as they do utility and economy.—J. G.

Lilium speciosum rubrum with White Flowers.—In a garden near Amsterdam a plant of Lilium speciosum rubrum produced this summer nine flowers, of which the first, third, fifth, seventh, and ninth, counting from the bottom upwards, were of the usual colour, but the second, fourth, sixth, and eighth were pure white, like those of the Dutch L. speciosum album. The plant in question has been two or three years on the same spot without being transplanted. In 1877 it yielded five flowers of the normal character. The place in which it is growing is a turfy, sulphury fen containing a variety of soils, in some of which the flowers of plants are very much inclined to vary temporarily in colour. I should like to know if a similar variation in the flowers of Lilium speciosum rubrum, or in other sorts of Lilies, has been observed elsewhere.—J. H. Krelage, *Haarlem.*

The Alpine Sparrow-wort (Passerina nivalis).—This is an interesting dwarf Alpine plant, nearly allied to the Daphne. It grows to about 1 ft. in height, clothed with a profusion of narrow and pointed leaves, which are interspersed with a copious supply of Mezereum-like blossoms. It is found at very high elevations on the Pyrenees.—W.

TREES, SHRUBS, & WOODLANDS.

STREET TREES.

I have read in The Garden (p. 500) that a contract has been entered into to plant with Plane trees St. George's Road, from the Elephant and Castle to Westminster Bridge Road; also to complete the planting of the Blackfriars Road up to the approaches to the bridge. The planting of trees along the margins of streets is a matter of great importance, not only on account of the cheerful aspect produced by their colour and shade, but also from a sanitary point of view. Some few medical men may object to the planting of trees on the ground that decaying vegetable matter is dangerous to health; but, surely, such objections are frivolous and easily overcome, being simply a question of scavengering. The power exercised by a given quantity of healthy foliage in the purification of the atmosphere, during its period of growth is vastly in excess of any vitiation it may cause by its decay in autumn. However, my purpose is not so much to discuss the merits of trees in streets from a sanitary point of view as from an arboricultural one. In No. 321 of The Garden I gave a description of what I considered the best method of planting, staking, and guarding trees in streets, together with the best varieties for populous towns; to my opinions there expressed, I have nothing to add, so far as those particulars are concerned; but, seeing that in various parts of London the local authorities contemplate the planting of trees along the sides of streets, I wish to again call attention to the necessity of planting really suitable trees for the purpose. So much carelessness or want of the right sort of knowledge has been shown in this matter that a section of the public has become tired of the subject in consequence of the expense and subsequent failure. If we wish to succeed in enlisting the favourable opinion of the public regarding street trees, our first and principal aim must be to succeed in the object which we have in view, viz., to form lines of trees along the sides of our streets, which, from their nature are suited to withstand the murky atmosphere inseparable from large towns, trees which will grow with reasonable rapidity, and produce an abundance of healthy foliage which will remain in good condition until October. These are the conditions which the public have a right to expect, and for which they are called upon to pay in the shape of rates. Since, therefore, the planting of street margins devolves generally upon public bodies, it seems to me to be necessary to employ competent persons to carry out the work. Too often it is placed in the hands of the surveyor who, as a rule, has no knowledge to fit him for the purpose, and it is carried out by labourers who are perfectly ignorant of what is required. Consequently, failure is almost certain, or, at all events, but a poor return for the outlay is the result. None but really good trees should be planted, and the necessary preparation for their reception should be thoroughly made. Even though the expense may appear somewhat large at first, I am perfectly satisfied that the result will more than repay it, and, what is of great importance, several years will have been gained through making a good beginning. An instance of this will be evident to anyone who will pay a visit to the Victoria Embankment. Here is a case in which good trees were purchased in the first place, ample provision made for planting, and the work carried out under competent supervision. The great fault, perhaps, which was made was, that double the quantity of trees necessary were planted, the cost, of course, being in proportion. These extra trees should be removed without delay if this avenue is to become what it bids fair to be, one of the finest to be found in any European town. Everyone has such reluctance to uprooting well-grown trees that I would recommend that trees should be planted at first at the distances at which they are to remain In the case of the trees on the Victoria Embankment, it is my opinion that they might be removed and transplanted with perfect safety. Public bodies would do well to consider these remarks, and let the cost of trees and tree guards be somewhat more proportionate than hitherto. The latter may be replaced at will, but a few years' growth upon the trees means so much time. Generally, tree guards or fences may be expensively elaborate, but should the cost of the trees exceed a few shillings each, it is often looked upon by the uninitiated unnecessary expenditure. No greater error than this can be committed, and if, by giving expression to these opinions, public bodies may be induced to take up the matter earnestly and fairly in favour of the trees, my object will have been gained and myself amply rewarded. Absolute success would be the result, which would certainly be a satisfactory return for any reasonable outlay which might be made in respect to purchasing and planting trees on street margins. C. Dennis.

Southwark Park.

WALL PLANTS.

A writer in The Garden (p. 415) mentions several plants as being suitable for planting against walls, to which I think a few additions might be made with advantage. I therefore give the names of two or three which I have used for the purpose many years ago. Some of them are perhaps too tender for every situation, but as I give the result, the planter can exercise his own judgment in the matter:—

Clianthus puniceus, a fine New Holland plant, is but seldom met with now-a-days in good condition; the fact is, that when grown under glass it becomes so sadly infested with red spider as to be very unsightly; therefore, after struggling with it as an indoor plant for many years, I at length planted it out against a south wall fully exposed, where it grew well and became clothed with foliage of the brightest green, and flowered abundantly the ensuing spring. I believe I partly covered it up with a mat during some very bad weather the first winter, but subsequently it received no protection, and the result was a severe winter killed it; this was a great many years ago. Subsequently, however, I planted another one outside, and managed to keep that alive for several years by covering it up with a double mat in very hard weather, but an unusually hard winter (1866 67) also caught it; nevertheless, on account of its beauty when in flower, I consider that it well repaid me for the loss which its destruction entailed, for no plant of the kind that I had ever seen flowered so profusely. This may be accounted for by the fact of the wood being well matured and the situation being a dry and sunny one. The plant was quite 12 ft. high and of proportionate width, and covered the space which it occupied with a dense mass of foliage of the deepest green, and its clusters of flowers were of the richest coral. I can strongly recommend this plant to all having a favourable position.

Edwardsia grandiflora.—This is also, I believe, a New Holland plant, and more hardy than many imagine. Out-of-doors it assumes quite a deciduous character, and, growing by the side of the Clianthus just alluded to, it did not seem to suffer in the least from the severity of the winter and flowered freely, its blooms having a peculiar insect-like appearance.

New Zealand Veronica.—This, on a low wall, flowered most abundantly late in the season, and under a mat in very severe weather it survived several seasons, until it became too large for the situation which it occupied, and had to be done away with.

Ceanothus azureus.—This is well worthy of a place on account of its handsome flowers, as are also some others of the same genus.

A Retired Gardener.

Beech Trees and Underwood.—Surely "J. S. W." is talking greater nonsense than M. Alphonse Lavallée in asserting that "underwood does not thrive and flourish under the Beech," and as to Beech being "the worst tree in the forest for injuring and destroying underwood" it is simply incorrect. "J. S. W." should be free of absurdities like these, ere he imputes nonsense to men such as M. Alphonse Lavallée. As to the Walnut, I have no doubt M. Lavallée was speaking of a wood—Walnuts in numbers and not a single tree. A single tree is no proof of whether underwood will grow in woods under many Walnut trees, because the surroundings of a single tree are free and open. At the same time I believe underwood would grow under Walnut as well as under Beech in this country.—H. Knight, *Floors.*

The White Indian Azalea Out of doors.—With reference to this matter (p. 498), I may say that, during the present autumn, I have seen large, healthy plants of this Azalea at Hewell Grange, Worcestershire, and I remember there were specimens of it in the grounds there thirty years ago. There are also very handsome specimens of A. amœna growing near, covered with well-developed flower buds. I am surprised that this latter kind is not more freely planted than it is, as it is quite hardy. Altogether, the collection of trees and shrubs at Hewell is a most interesting one. The soil is especially suitable, and the thinning out of inferior plants to make room for better and rarer kinds has been judiciously carried on for a long series of years without intermission. I saw also in the grounds at Battle Abbey a large bed of white Azaleas, but, on the whole, the plants were not so healthy as those which I saw in Worcestershire. I rather think the south-west wind from Beachy Head and Eastbourne would come across the spot where they were planted with considerable force at times, and would, no doubt, at that distance, be impregnated with salt. I remember also when I was at Hillsboro' Castle, Co. Down (about 10 miles from Belfast), there was a bed of these white Azaleas growing in a sheltered part of the grounds. This was in the year 1853. I believe, too, I have seen them planted out at other places. Like Camellias, there are many localities in which they keep in fairly good health, but their flowers are delicate, and our springs are frequently unpropitious. It is not often they can be had in such good condition as under glass.—E. Hobday.

—— Twelve years ago, several dozen fine plants of this Azalea were growing in the shrubbery borders in the gardens at Woolton Hayes, Liverpool. They were planted in beds of peat, and placed in prominent positions in front of Rhododendrons and Kalmias. I saw these plants pass through three winters unprotected and undamaged by frost or damp, and in strength of growth and profusion of flower they were equal to any plants I have ever seen in pots.—J. Roberts, *Gunnersbury Park.*

—— There is a very fine white Azalea in the garden attached to the Goat Hotel at Beddgelirt, and we have a small one here, within 4 miles of Snowdon, and 600 ft. above the sea. We consider it to be quite hardy, and I know it also grows well in the south part of Carnarvonshire.—Ellen Dardishire, *Penygroes, Caermarthenshire*

—— For these last forty years, and I know not how much longer, the white Indian Azalea has done well without any protection in the garden here. It is planted in a sheltered place in rather light soil, with a good natural drainage in the sandstone rock. The plant blossoms fairly well every year, and it has borne frosts which have killed Bay trees to the ground. Situation, 40 miles south from London, on Hastings road; 200 ft. above the sea; and about 70 ft. from the bottom of the valley.—Wm. Morland, *Lamberhurst Court Lodge, Kent.*

—— Both the white and the old lilac varieties are growing most luxuriantly in the arboretum at Longmead, Bishopstoke, Hampshire. These, I believe, are single plants, and, to the best of my recollection, their diameter was from 10 ft. to 11 ft. The only protection which they received was in spring, when the buds began to expand; several long poles, stuck into the ground, were bent over them, and either mats or tiffany were thrown over the poles at night, and taken off in the daytime.—D. S. Gillett, *Weybridge.*

—— With regard to planting out Azaleas, I would say, yes; plant out the whole of your spare stock, and rest assured that it will grow and thrive too; but, as for its flowering well outside, I would not be so positive. I have seen several beautiful specimens of the white Azalea growing on the side of a hill in a north-west aspect, in Greenwood Cemetery, Brooklyn, U.S.A., where the temperature falls far below the average winter registerings, even in the north of Scotland, looking the picture of health, and one sheet of bloom. There can be no doubt that the hot summers experienced there are most conducive to its flowering properties, inasmuch as they thoroughly mature both wood and buds before frost sets in; otherwise, I cannot see how the plants could survive.—J. Knight, *Reading.*

—— In answer to the question with regard to the white Azalea flourishing in the open air in England, Ireland, or elsewhere, I beg to say that I planted at Lamorran many of these Azaleas in the year 1852 on a north bank, and have not lost one plant since, although I have seen the thermometer certainly on two occasions below zero (Fahr.)—J. T. Boscawen.

—— In the gardens at Singleton, Swansea, close to where I am writing, the white Indian Azalea has been planted in the shrubberies for a number of years, and it flowers and does as well in every respect as any Rhododendron.—Cambrian.

—— I have plants of this Azalea which have been in the open air without shelter for these forty years past, and, though the plants are still small, they are covered with pure white bloom every spring. The white Azalea is hardy in the open air anywhere in Cornwall, and many other varieties flourish here equally well.—J. J. R., *Penrose, Helston.*

—— Eight or nine years ago a plant of the old white Azalea was planted out against a wall with a south-east aspect here, and it has not been injured by any frost that has occurred since, though it has never received any protection. A south-east aspect in this cold, damp valley may be considered the very worst for tender plants, because the sun strikes them earlier on that aspect than any other; therefore, a south-west wall would give all tender plants a better chance.—D. Thomson, *Drumlanrig, Thornhill, Dumfriesshire.*

—— We are near the sea, but very much exposed to west and north-west winds. This season our white Azaleas (of which I gave you an account, p. 485) are again well set with bloom; in fact, on every shoot there is a bloom bud. They never receive any protection whatever, and for a week back we have registered from 7° to 13° of frost every night.—John Morrison, *Narrowwater Castle, Warrenpoint, Co. Down.*

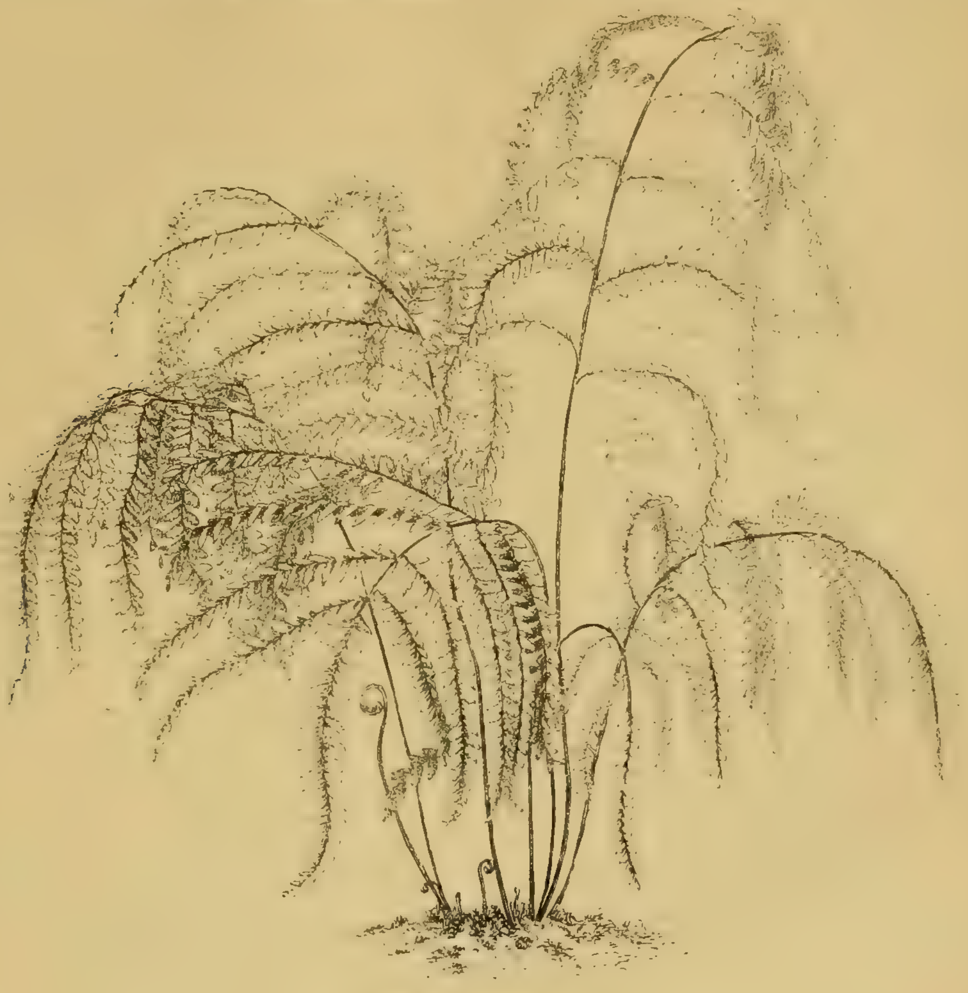
—— The white Indian Azalea succeeds here out of doors splendidly. We have a quantity of it growing in the Camellia garden; one clump of it is about 10 ft. in diameter. They produce annually quite a mass of bloom, of fine form and subtance. The plants receive no protection whatever. Some are out in open spaces, others in borders by the walls; but all grow and flower as freely as the hardiest Ghent varieties. The soil in which they are growing is mostly loam, with a little bog-mould of rather a toughish, retentive character.—John Kinsela, *Castlemartyr, Ireland.*

Hodgins's Holly.—The well-known Ilex aquifolium Hodginsi is the best of Hollies for town gardens, and a very fine Holly anywhere. Usually when Hollies are planted in smoky and confined places the common typical form of I. aquifolium is chosen, and it does very well. But Hodgins's beats it every way. It is more noble in leafage, richer in colour, denser in habit, and more rapid in growth. I am really surprised at the progress of this variety in my collection, which, being extensive, affords me abundant opportunity for comparison. Not one of our Hollies, the varieties being nearly seventy in number, has in the course of nine years made such growth as Hodgins's.—"Gardeners' Magazine."

THE INDOOR GARDEN.

ADIANTUM HENDERSONI.

This is an elegant and distinct Fern, and in habit unlike any other Adiantum. In the graceful arrangement of its foliage it greatly resembles the ribband Fern (Pteris serrulata), and in the lovely rose tinges of its younger fronds, it calls to mind the coloured foliage of Pteris tricolor. As the fronds mature the rosy line changes to a coppery tint, which, in its turn, gives place to a pleasing shade of green, but as the plant is evergreen it is seldom to be found without fronds possessing all the colours just named. It was imported from New Granada, and requires to be grown in an intermediate house. Messrs. E. G. Henderson & Son, of the Pine-apple Nursery, Maida Vale, from a plant in whose collection our sketch was taken, first distributed it. For vases or baskets it is a desirable Fern, and as a pot plant it is well worth adding to even small collections. S.



Adiantum Hendersoni.

Linum trigynum in Winter.—The bright golden flowers of this East Indian Flax are very striking at this season. It is a plant easily grown, but not nearly so common as it ought to be where winter flowers are so much in demand. Cuttings of the young shoots taken in spring root quickly under the same conditions as those under which ordinary soft-wooded plants are struck. They should be potted off when rooted, and grown on in the warmth of the hotbed for a time, occasionally pinching a runaway shoot to induce a bushy habit, and giving the plants more pot room as they seem to require it. As the season advances move them to the greenhouse, and, finally, in July move them to a cold frame and give them plenty of air. Their great enemy is the red spider, for which the best and only antidote is to encourage a regular, steady growth, and to give plenty of water at the root and over the foliage too when the weather is warm. Pretty little flowering plants may be grown in one season, and although the individual flowers do not last long, they open so freely in succession that the fallen ones are not missed. When planted out in a conservatory border in a light position it assumes more the appearance of a shrub, and is more effective than when confined to a pot. It will succeed in a compost consisting of two-thirds turfy loam, one-third leaf mould, and sand sufficient to ensure the necessary porosity.—E. Hobday.

WATERING AND THINNING CAMELLIAS.

Nearly all Camellia plants, if in good health, will set more buds than they ought to be allowed to carry to perfection; in fact, if left on, they seldom do retain them all till they open; and not unfrequently over-loading the plants leads ultimately to weakly growth and small flowers. Therefore, wherever the flower buds have set thickly, they should be thinned, leaving one, two, or three buds on each shoot, according to its length and strength. In but few cases should so many as three buds be left. One bud will be sufficient on all shoots not more than 5 in. or 6 in. long. A plant thickly studded with well-ripened shoots carrying one bud each will in the aggregate bear an enormous number of flowers. Nowadays, in using Camellia flowers for bouquet making, there is no necessity to cut the branch on which the flower grows, or any portion of it. Simply cut the flower off where the calyx joins the branch, and mount it on wire, so as to form an artificial stalk. There is a special wire made for this purpose, which may be obtained from any of the principal London seedsmen. After a little practice anyone can mount flowers on wire, but Camellias require more delicacy of touch than other flowers, as they show any bruises so distinctly. Two pieces of wire are required for each flower, and they may vary in length according to the length of stalk required; but from 9 in. to 12 in. is generally sufficient. The flower is held carefully but firmly in the left hand, whilst the wires are thrust half-way through, at right angles to each other, with the right. The exact point at which the flowers should be pierced with the wires will vary with different-sized blossoms; but the object is to hold the flower together without the wire being seen. The ends of the wires are brought down under the flower, and one is wound a few times round the other, forming a very handy stalk, much better than the natural one for bouquet making. Should foliage be required, there will be no difficulty in attaching leaves to the base of the flower by means of the wires. Camellia blooms mounted in this way are usually more lasting than if cut with a piece of their own wood attached, as the petals are very apt to drop out of the calyx when taken into a warm room; but, when properly wired, the petals are held in position by the wires. Besides, when cut with a piece of wood, it is very difficult to bring the flowers to a face to display them properly, as, unlike Roses, they do not grow straight up from the ends of the shoots; but with a wire stalk they may be made to face in any direction.

Camellias at all times require a good deal of water, but especially at this season, as not only have they a large amount of foliage to support, but there is the load of rapidly swelling buds. At no season are the roots in a greater state of activity, and if not well supplied with water something must be wrong; usually it is the buds that first give way when the period of trial comes. I have occasionally come across cases where both the buds and leaves were falling through want of water, and when buds or leaves begin to fall the roots should be examined, not only on the surface, but the bottom of the ball, or, if planted out, open the border and see what sort of condition the bottom is in. When a hard ball in a pot becomes thoroughly dry, the pot should be placed in a tub or tank till all the air bubbles have done rising, then lift it out and water with more care in future. At this season onwards for the next two months there is more danger of mischief being done by withholding water than at any other period of the year. Plants do not flag now as they do when the leaves are soft and a hot bright sun is shining; and especial care should now be given to plants growing in beds. Conservatories are often kept too warm in winter to suit the wants of Camellias, and if, in addition, they only receive a scanty supply of water, something must go wrong. A gentle dewing overhead in the morning of fine days will be beneficial, and the sponge should be used as often as possible, to keep every leaf bright and clean. Weak soft soap and water will give a gloss and polish to the plants that add much to their healthful appearance. Camellias, when well cared for, will live to a very old age, constantly increasing in value. I was in a conservatory in Worcestershire a short time since where there was a tree of the old double white that must have been much more than fifty years old. I knew it more than thirty years ago, and it was then a large old plant. It is still in robust health, and is carrying an immense number of blossom buds.

There is no doubt that Camellias planted out in a lofty house, without much artificial heat, will grow to a much larger size than is generally supposed. Good turfy loam, where it can be had, should form the basis of all borders for Camellias, and everything in the shape of leaf mould, unless thoroughly decomposed, should be rigidly excluded, as it is apt to engender fungus. I was visiting a large nursery establishment in the north some time ago, and the border of a large house, into which a great number of Camellias had been planted for cut flowers, had become so infested with fungus spores, and these had so affected the health of the plants, in spite of all that could be done, that they were at last compelled to lift the plants and pot them. This, I know, is not an isolated case. I once had to deal with a similar one. I lifted the plants out, and renewed the soil twice, and drenched both the plants and the borders frequently with soot water, until I ultimately conquered the fungus; and afterwards the plants grew amazingly, and produced very fine flowers. Although rough leaf mould, or the bits of roots and other foreign matter frequently found in peat, will engender fungus under certain conditions, yet, if the border be kept moist, it will not make much headway. It is when the border or any part of it gets dry that the fungus spores vegetate and spread so disastrously: and when the fungus reaches that stage it is very difficult to drown it out, as water will not penetrate the dry spots so long as a passage can be found in any other direction. Hence the necessity for care in watering Camellias that are growing in beds or borders. Soot water, in a weak solution, may be given with advantage at this season at every watering. It will support the foliage, imparting to it a dark green colour; and a plant with firm, healthy foliage very rarely fails to produce good crops of flowers.

E. Hobday.

PANSIES IN POTS.

Time was when Pansies were much grown in pots for show purposes, to get cut blooms early in spring for April shows, and also as specimens to be shown in pots at the end of April and early in May. In this way not only were beautifully finished flowers obtained much earlier than they would be in the open ground, but excellent plants, carrying charming flowers, were also secured by the cultivator. That was a quarter of a century ago, when the Royal Horticultural Society used to offer prizes for the best twelve Pansies in 8-in. pots. At that time the culture of hardy flowers was much more followed than it is now; the bedding craze had not set in in its intensity and turned the heads of half the gardeners in this country. If people who are fond of cultivating flowers could come to realise what splendid blooms of Pansies can be had from plants well grown in pots, blooms that would be remarkable for their well-defined and rich colours, they would set about growing plants in pots. The best plants for this purpose are those grown from cuttings put in in June or July; good cuttings make good plants for pots, if, when they are rooted, the leading shoot be pinched out so as to make the plants break up well from the base of the main stem. At the time to which I have referred above the plants were potted from the cutting bed into what we used to term small 3-in. pots. We used to have three sizes of 3-in. pots in those days, the smallest being a kind of large thumb pot, and from these they were shifted into large 3-in. or 4½-in. pots, according to their size, and wintered in these. The great aim always was to have plants thoroughly well rooted; and, in a mixture of yellow loam, leaf mould, and rough sand they used to grow famously, and by February had masses of healthy young roots. The blooming plants were sometimes in 6-in. and sometimes in 8-in. pots, but for blooming only, good plants and flowers can be had in 4-in. pots. When the plants were put into their blooming pots the compost used was one of fibrous, rich loam, some well-rotten manure from an old Cucumber bed, leaf mould, and sand. The roots soon ran out into the new material, and it was always found to be of great advantage for the plants to get established in the blooming pots as quickly as possible. Some care is necessary in potting. The best time to do it is early in February when the plants are fairly active. Potting should be carefully done, providing drainage according to the size of the pots, and giving a good amount at all times. The soil should not be pressed hard about the roots, as they work in much better when rather loose. The plants for exhibiting in pots used to have something like five or six leading shoots and more; the more the better, the cultivator used to think, provided they were of equal length, a matter of some importance in securing a good, symmetrically-grown plant. Given a plant with strong leading shoots, any young growths coming up from the base of the stem were cut away, so as to throw all the energy of the plant into the flower-bearing shoots. In early spring the plants do best in a slightly-raised, cold frame, so that wet can drain away. When the flowers began to open, air was freely given, but care was always taken that cold draughts did not play on the flowers, else the petals would curl. Just as the buds began to show, manure water was given twice a day, and this stimulus greatly assisted in the development of large, smooth, well-formed flowers, and beautiful they were when well finished. Whoever attempts to grow Pansies in pots must be prepared to give them plenty of attention. It is one leading condition of success; no one can grow any flower thoroughly well without making a sacrifice of time and labour; but the reward is rich and valuable, and it is especially so in the case of the Pansy. I wish some one could be induced to take up the culture of the Show Pansy in pots, and grow it as it deserves to be grown. Some old-fashioned flowers are found coming to the fore again; may be the Pansy will be found included among them. D.

SELAGINELLAS FOR TABLE DECORATION..

Few plants excel these for table decoration, inasmuch as where a good supply of them exists a little ingenuity will find means of working them in such a variety of ways, that, although employing much the same material, a very varied series of decorations will be the result, for as a living carpet of verdant turf surpasses all other groundwork for showing off to advantage the rich and varied colours of summer flowers, so does the verdure of healthy masses of Selaginellas display in perfection the brilliant colours now so largely used in table decoration. In a moist, genial temperature, ranging from 50° to 65°, the Selaginella denticulata grows amazingly in a minimum of soil in tins or trays made to fit the table. Even the smallest pieces quickly become a dense mass of green; or if pyramids or circular masses be desired, wire framework of whatever form may be wanted, filled with soil and treated in the same way as the trays just alluded to, quickly becomes covered. Perhaps, however, the most serviceable mode of growing this pretty Club Moss in quantity is in small pots from 3 in. to 6 in. in diameter; and as it is a plant that will grow under a wide range of temperature, it is always advisable to have a good reserve planted out on bare, partially shaded surfaces, such as usually exist in Vineries or other fruit houses, or on the surface soil of large specimen plants in tubs, boxes, or pots, and in cool houses where it acquires a sturdy habit of growth. Under such circumstances, it is in the best possible condition for being quickly increased to any extent. Taking the desired quantity of pots and filling them with light, porous soil, a small bunch of Selaginella should be inserted in each; they should then be set in a shaded house or frame, where they can be kept moderately close until they have become established; afterwards, if not required for immediate use, they may be kept gently moving in any cool house or frame until within a month or six weeks of the date on which they are likely to be required, when they may be transferred to any warm forcing house, as, for instance, under Cucumbers in winter, or early forced Vines, partial shade being rather advantageous to them than otherwise. Under this treatment the pots will rapidly become circles of lovely verdure, that will of themselves, when transferred to the dining table, have a pleasing and refreshing appearance, and in connection with bright silver, either with or without flowers or fruits, cannot fail to prove satisfactory. Where choice cut flowers are scarce a minimum quantity inserted in a groundwork of Club Moss will be set off to advantage, especially white, scarlet, or pink. A few slender Ferns or Palms, such as Cocos Weddelliana or the graceful Arecas, form a simple and elegant arrangement on a carpet of living green. One of the best arrangements which I ever saw was a dessert set on a table lighted with three elegant silver candelabra, a pair of plants being put into silver hunting cups to match. The remaining surface of white cloth was covered with long sprays of Selaginella laid irregularly, an arrangement more effective than any kind of Fern fronds which I have yet seen. J. Groom.

Linton, Kent.

ABUTILON IGNEUM THE SAME AS A. INSIGNE.

Through the kindness of Mr. Barron, the Superintendent of the Royal Horticultural Society's Gardens, I have had an opportunity of examining a fresh specimen of the fine Abutilon exhibited under this name at the last meeting of the Society, and of comparing it with authentically-named species at Kew. There is no doubt whatever that it is the plant described and figured by Planchon in the "Flore des Serres," in 1850, vol. vi., part II., p. 551, under the name of Abutilon insigne. In 1855 it appeared in the "Botanical Magazine," plate 4840. Though comparatively an old plant, it appears to be still rare in gardens, whilst it deserves to be in every collection, for it is an exceedingly elegant and beautiful species, and very distinct from any other in cultivation. The only character in which the Abutilon igneum differs from the plates quoted above is the deeper, richer colour of the flowers, due, probably, to the greater vigour of the plant. Moreover, the plates quoted above differ as much from each other as either of them does from our plant. The flowers in the original plate in the "Flore des Serres" present a greater development of the white ground, and the crimson venation is of a lighter tint, whilst those in the "Botanical Magazine" figure are intermediate in colouration between the original and ours. For the information of those who have not had an opportunity of seeing Abutilon insigne, as it should now be named, we will briefly sketch the principal features which the cut given at p. 474 of The Garden could not show. It is of compact habit, flowering when quite small, with ample leaves, and pendulous lateral and terminal racemes of bell-shaped flowers. The leaves are prominently net-veined below, the veins, as well as the young shoots, flower stalks, and calyces, being more or less densely clothed with short, stellate, brown hairs, and the polished, shining petals are of a rich crimson, with white areolations and margins, and prominent, purplish-lake veins. Another handsome species of this genus, being in gardens under two names, we take this opportunity to explain which is right. We allude to A. megapotamicum, perhaps better known under the name of A. vexillarium, given to it by Prof. Morren, who took it for an undescribed species, and, as the beautiful contrast of colours it presents very well represents the Belgian national colours, he thought the name of Standard-bearer Abutilon an appopriate one. The name megapotamicum was given in allusion to the home of this species by the great waters of the Rio Grande, in South America. W. B. Hemsley.

PRIMULAS AT BIRMINGHAM.

Seeing there were not less than thirteen classes for Chinese Primulas at the late Birmingham exhibition, it is not to be wondered at that the display was not only extensive, but very attractive. Birmingham is, to a great extent, the home of the Primula, for Mr. James Tomkins, of Sparkhill nursery, there, has done good work in the way of improving this fine flower, and his Marquis of Lorne and Princess Louise—the first a rich crimson-purple flower, and the last a remarkably fine blush-white—are standard varieties in the midland district. A dozen of Primulas—six red and six white—shown by Mr. T. Denning, gardener to J. Fenton, Esq., Yardly, to which the first of the special prizes offered by Mr. T. B. Thomson, seedsman, Birmingham, was awarded, I thought to be pretty well perfect as exhibition plants, because so finely and so evenly grown, but the *habitués* of the Birmingham exhibitions said they were not so good as last year. In the nurseryman's class for twelve plants, six red and six white—a very good arrangement, by the way, as it secures a proper contrast of colour in a group—Mr. J. Tomkins was first with admirably-grown plants, bearing splendid flowers; the dimensions, as well as the stoutness, of some of them were particularly striking, and, with but few exceptions, this fine character ran through the whole. The double varieties were well grown, but in point of effectiveness they fell far short of the single types. A large plant of a double Primula, however well grown, will be certain to have only medium-sized flowers, and the purple and cerise-red colours looked quite dull and uninteresting by gas-light. If double Primulas are to be shown, I think it should be in the form in which Mr. R. Gilbert, of Burghley, sends his plants to the meetings of the Royal Horticultural Society—plants in a state of young, vigorous development, and carrying at the most ten trusses of bloom. Then the flowers are large, bold, and fairly developed. I am treating now of double Primulas for exhibition, not for general decorative purposes. It was at night, when the gas in the spacious Town Hall at Birmingham was fully turned on, that the Primulas shone out to full advantage; all the flowers having purple shades became intensified to rich cerise and scarlet hues, and the white and blush flowers had a glistening whiteness of star-like brilliancy. By their side dark-coloured Chrysanthemums were ineffective. Primulas are fine and striking plants for gas-light decoration, and cultivators should bear this in mind. The only thing comparable with the Primulas by night were the vermillion bracts of Poinsettia pulcherrima. These were splendid in hue and particularly striking. D.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Witsenia corymbosa.—This old-fashioned plant is now seldom seen, and yet its culture is by no means difficult. It requires a cool house, good drainage, and abundance of water. It might be grown with advantage for winter flowering, its bright blue blossoms being especially attractive at this season of the year. We lately saw good examples of it in full flower in Messrs. Rollisson's nursery, Tooting.

Winter-flowering Tropæolums.—Where flowers in winter are considered indispensable, this brilliant family should always have a place. Nothing with which I am acquainted in the way of winter-flowering plants can rival the Tropæolums in their own particular shades of colour, and whether used as specimens for the embellishment of the conservatory, or in a cut state for table decoration, their vivid glowing tints render them invaluable for these purposes. A very pretty and cheerful effect is obtained by training them up the rafters in a temperate house; there close to the glass they flower freely, and not only enliven the whole structure, but yield an abundance of flowers for cutting. There are both scarlet and yellow-flowered varieties, and some of each colour should be grown. The one great point to be observed in the cultivation of these plants for the production of winter bloom is to start them early into growth in order to secure size, and strength, and substance. Strike some cuttings daily in April and shift them on, using a rich compost until they get well established in their flowering pots. Subject them to full sunshine and give them plentiful supplies of water in hot weather. If they are to be trained up the roof, then they must be prepared for that purpose. The best way to effect this is to train them to some stout strings during the summer, and at housing time they may be attached to the rafters, thus effectually and at once furnishing the house with flowers and foliage. Plants thus grown possess a vast amount of flowering power, and if placed in an airy, temperate house remain fresh and green the whole winter through. These Tropæolums may also be grown as specimen plants by training them upon a hollow trellis, and if not tied in too closely they will not appear formal. Such plants associated with Chrysanthemums or plants of that kind would have a particularly bright appearance. When thus grown they must be stopped from time to time during the growing season, and the bottom portions of the trellis must be kept well furnished with shoots. The flower buds, too, should be kept picked off until the end of October, when they may be allowed to flower. For this latter purpose it is not advisable to employ seedlings; they grow too rankly. Plants from cuttings, I have found, are induced more readily to assume a shrubby habit, and they flower more abundantly. Plants that have grown in the open ground may, if not too large, be lifted and potted, but they must be taken up with good balls, or they flag too much. I once potted a number that had been growing against a wall, and they did not suffer to any extent by the removal. If they are to flower throughout the winter they must be kept growing gently. In a cold house they will stagnate and rot. Plenty of air should, however, be given on all favourable occasions, as too confined an atmosphere will induce a weak and spindly growth. —J. Cornhill, *Byfleet.*

PLATE CLVII.

HABRANTHUS PRATENSIS FULGENS.

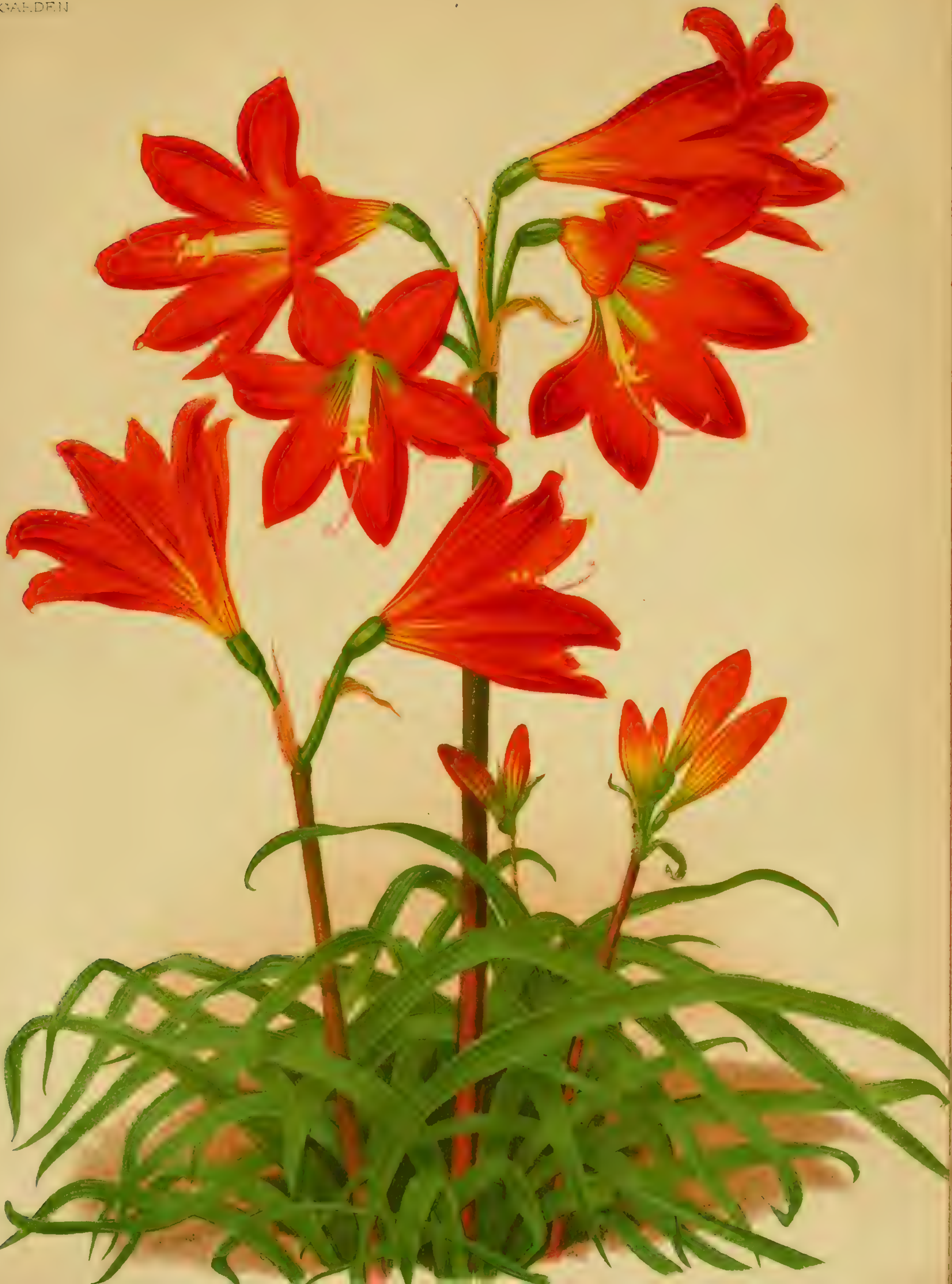
Drawn by NOEL HUMPHREYS.

This is the most brilliant and beautiful among new hardy plants which we have seen for many a day, and one, the peculiar splendour of which, when the plant is seen in flower in the open garden, a coloured plate fails to convey any idea of. It has been found to be quite hardy, and to bloom freely in the Rev. Mr. Nelson's garden at Aldborough, in Norfolk. Mr. Noel Humphreys visited that garden for the purpose of drawing it on the spot and as it grew in the border. It flowers at Aldborough at the end of May or beginning of June; the scapes rise about 1 ft. high, and are from one to four-flowered. It grows very freely in strong loam, improved in texture by the addition of a little leaf-mould and sand. Its propagation is too easy; for in many soils it is said to split up into offsets instead of growing to a flowering size. At Aldborough, where it does well, it makes numerous offsets. Herbert says it is from the meadows of Antuco, in South Chili, and adds that it flowers there in November. The species is, however, not well circumscribed, different writers having assigned it widely diverse limits, and it is possible that, in a revision of the species, several of the forms now referred to this name will have to be provided for elsewhere.

Goold's Artificial Manures.—Having used these manures rather extensively this season, and being desirous of eliciting the opinion of those who may have tried them, allow me to enumerate the subjects upon which I experimented, and with what results. Being specially prepared for different plants, I shall speak of the "Vine Compound" first. Having planted sixteen young Vines in July of last year, which made fair canes and ripened well, and being anxious to have what fruit they would carry, I applied this manure when the bunches began to show, and about every fortnight until the Grapes were ripe. The results were far beyond my expectations; both bunches and berries were large and well-coloured. Each Vine carried on an average six bunches, and having made good canes from the base, I am looking forward for my earliest crop from them next year. Under ordinary treatment, these Vines would have been useless for another year. Let us now take the "Fruit Compound." This I confined more particularly to Melons grown in pots. It was applied at every alternate watering after the fruit was set, and the result was three crops out of the same house of good table fruit. The plants averaged four fruits each, and occupied but a small amount of trellis. The "Hothouse Compound" I applied to Crotons, Dracænas, Marantas, Ferns, &c., about three times in a fortnight, and with markedly good results. Crotons in particular were much benefited by it, the foliage being very highly coloured. I am now using it freely on Solanums which were lifted from the open ground, and so far they look promising; it is also recommended for hard-wooded plants, but, as yet, I have not used it on them. The "Rose Compound" I applied to Roses in the open air, and the plants so treated were more vigorous, and bore finer blooms, than those to which no compound was applied. There can be no doubt that it might be applied to pot Roses with better results. Having a climbing Rose much attacked by aphides, I mixed some of this compound with soft water and sprinkled the plant over with it, and next morning very few insects could be seen on it. I am so thoroughly convinced of the usefulness of these compounds, that I intend using them on a much more extensive scale next year.—A. Hossack, *Ragley, Alcester.*

Growing Flowering Plants in the Shade an Evil.—Some of our Primulas are flowering very well this autumn, others very poorly. All were treated alike, except that the best bloomers were grown fully exposed to the sun, and the worst in a frame facing the north, at the back of a shed. The growth of the latter is very soft, and I attribute their flowering indifferently to their being grown in the shade. From what I can notice regarding all winter-flowering plants I would say the more fully they are exposed to the sun during their whole growing season the better.—Cambrian.

Chrysanthemums in a Cut State.—These are so useful that I find it to be a good practice to protect a few plants, when the blooms are expanding, from the inclemency of the weather. The excessive downpours of rain, high winds, and early frosts having cut short the display out of doors, more especially of the white and yellow kinds, I lifted a few plants and placed them under the protection of a glass roof, where they are affording an abundant supply of clear, unblemished flowers.—J. G.



PROPAGATING.

Taxus elegantissima.—This may be increased by means of cuttings made as shown in fig. 1, and put in in August. Well drain some 6-in. pots, and fill them with finely-sifted sandy soil, consisting of yellow loam and peat in equal parts. Press the soil down firmly, and put ¼ in. of sand on the top; water through a fine-rosed pot, and, when settled, insert the cuttings firmly with a peg or dibber. Plunge the pots half-way up in a tan bed without any covering, and without surface heat. They generally take about three months to root, when they may be placed upon shelves in the greenhouse for potting off in spring. This Yew may also be increased by grafting in March. Cut the stock as shown in fig. 2, and the scion as in fig. 3, bind them tightly together with strong thread or matting, and then place them in the grafting box, when they will be found to have united, and be ready to take out in about two months. H. H.

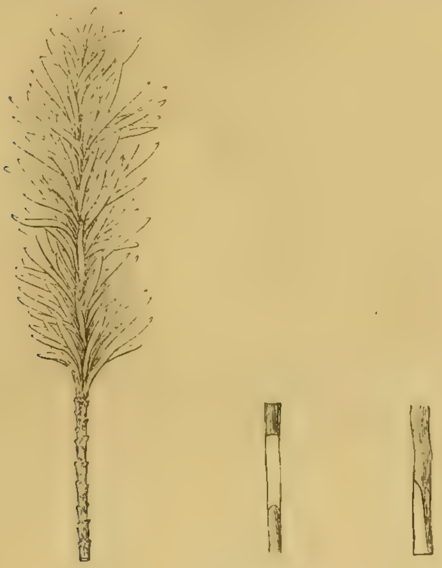


Fig. 1. Fig. 2. Fig. 3.

Cuttings and Grafts of Taxus elegantissima.

A NEW MODE OF STRIKING CUTTINGS.

A paper was read the other day by the Rev. George Henslow, before the Linnæan Society, on the subject of "Absorption of water by leaves and the green parts of plants generally," a question which, in days gone by, much exercised the minds of our forefathers, judging by the voluminous records of experiments they made, and which for some time, strange as it may seem to us, was decided in the negative. Whatever observers who only worked in their laboratory may have settled, it is certain that cultivators, by their practice of constantly syringing moisture-loving plants, &c., showed that they were satisfied that plants did absorb moisture through their leaves and green parts generally, as well as by their roots and stems, and now time in its flight has brought up again the question merely to show how unanimous botanists, experimenters, and cultivators are on this point, namely, that a plant can absorb water more or less by all its green parts; and the well-known experiment of placing cut branches or shoots in the sun till leaves and tender shoots flag severely, and afterwards exposing them to the night dew, was cited as an instance in point, as it will be found that next morning they have quite regained their freshness. From this, now an accepted fact, it is evident that if the leaves are allowed to die, or are cut off, their power of absorption is lost to the shoot, and it suffers accordingly when placed, as we will first suppose, in water; and Mr. Henslow showed how very greatly cut flowers are helped to keep fresh by their stems being cut rather long, and the leaves thereon left on and submerged in water. The Lilac was given as an instance of this, and it was also stated how very necessary it was to keep those leaves fresh by wiping off the mucus that collects, and thus causes decay sooner than is desirable.

This brings us to the subject of cuttings, which are usually placed in soil rather than water, and thus are apt to flag, and even die in many cases, and it is on this point that I would make a few remarks, as it seems that cultivators, influenced perhaps by those who taught that leaves did not absorb water, err in practice considerably; and, for the simplifying of the subject, I will take as examples those plants that are hardy enough to "strike" without artificial heat, as, though in many cases they are very easy to strike, the principle applies to all alike. How common a practice it is to trim off all the leaves from the lower part of a cutting, and top or dock the ends of those that are left on (a practice necessitated by the first operation), and how generally do cuttings thus treated flag terribly, whether they be put in pots or in the open border, unless a bell-glass be put over them to keep up a saturated atmosphere. A shoot, when growing on its parent plant, thrives by the circulation and elaboration of the sap, and if wounded or purposely cut, as in a layer, the descending sap speedily causes a callus to form, which in its turn puts out roots. This operation must also take place in a cutting; consequently, the quicker the circulation in a shoot the sooner roots are formed. It should therefore be our endeavour to keep up as brisk a circulation of sap as possible in the cutting, and not check the future plant by stripping it of nearly all its leaves and then, to counteract the evil effects of that operation, put a bell-glass over it, reducing evaporation, and with it the circulation in the cutting, to a minimum. How to hit the happy mean between undue evaporation on one hand, and damping off and stagnation on the other is most easily achieved by simply letting "well alone," that is, by planting the cutting with all its leaves on, and taking care that there shall be a just proportion between the buried leaves that absorb, and the exposed leaves that give off moisture, so that with a fairly moist soil the cutting shall not flag too much, or be gorged with undigested sap by having almost all its leaves buried. As in cuttings the leaves cannot be examined or sponged to avoid decay as long as possible, the soil must be open and loosely broken up, so that air may penetrate as freely as may be to the buried parts, and the leaves will then, if other conditions be suitable, last until roots are formed and give an impetus to the growth of the cutting that will be speedily noticed by any one who has tried such a plan. Shoots somewhat larger and longer than are usually taken for cuttings are the most desirable for this mode of propagation, which might be called the "rough and ready" plan, and the percentage of losses will be found reduced to *nil* in such plants as Carnations (especially the free-growing Cloves), Pinks, Mule Pinks, Roses (both Tea-scented varieties and Hybrid Perpetuals), and the variegated varieties of such things as shrubby Veronicas, especially the silver variegated V. Andersoni, which so often is apt to wither up or damp off when its cuttings are stripped of their leaves and put in a pot; while many persons have lost some pet Carnations by trimming off and docking the leaves of the cuttings (like a horse's tail), which, had they simply been planted as they were taken from the parent plant, but with greater length of "grass" than usual, would now adorn in number the gardens of their admirers.

Soils and situations vary so greatly that no positive rule can be given as to the depth such cuttings should be planted, but it will be found that one-third of the shoot above ground is tolerably near the mark; and it is evident that a soft-growing plant like V. Andersoni var. requires to be more deeply planted than a Carnation cutting, the object at heart being always to strike the happy mean between absorption and evaporation without the need for bell-glasses or any such protection. E. H. Woodall.

Pellæa procumbens.—This makes an excellent indoor basket plant, or it may be grown in pots or pans suspended by means of wires from the roof. It is light and graceful and pleasing in colour, its pinnæ being of a peculiar shade of green. It will succeed in any light, airy room.—S.

GARDENING FOR THE WEEK.

Roses.

Brier Stocks.—Although there can be little question that in far the greater portion of soils, Roses on their own roots for general decorative purposes are preferable to such as are budded on either dwarf or tall standards, nevertheless, for some positions, standards are useful, and by cultivating Roses in that way the advantage is offered that in the case of any new or scarce variety a larger number may by this method be grown up to a blooming state in a shorter time than by having them on their own roots. Where they are to be increased in this way, it is necessary annually to provide a sufficient number of stocks for the number intended to be budded, and in this case as in all others of propagation, it is well to be on the safe side in procuring enough, so as to allow for any that may not take, or which, even after the inserted buds have become established, may not grow away freely, for, especially where Roses are grown on the Dog Rose, the stocks of which are got from the usual source, a very great difference will be found in the progress which the plants make, a difference that in most cases may be traced to the more or less vigorous condition of the stocks, that in themselves differ very much after planting in the way in which they make roots and the strength which they consequently attain, on which latter will, in a great measure depend the progress the Roses budded upon them are able to make.

Selection of the Briers.—The above matter rests a good deal upon selecting such Briers as are suitable for the purpose; they should consist, so far as possible, of comparatively young Briers alone, rejecting all that have attained that very hard condition of the wood and rusty brown colour in the bark which is directly indicative of their being old and much less likely to form new roots freely, and grow away with the vigour necessary to support and furnish heads of a considerable size in little time. From observation in this matter, extending over a long period, I am convinced that one half the failures of Roses individually, when budded on the Dog Rose, are traceable to the stocks being too old when got in. No time should now be lost in procuring them. In carrying out the operation it is usual to cut away most of the existing roots; in fact, the stocks may generally be said, when ready for planting, to have more the appearance of an ordinary walking stick, the head of which represents the amount of root left adhering to the stock; but where young Briers, that is, such as are about of a couple of years' growth, though often springing from the base of plants much older than this, can be got they are about the best, and if more of the roots, particularly those that are the smallest, can be secured without mutilation, there is no question they will grow away much freer than when less are retained. In the case of those who grow for sale, where the stocks have often to be procured from considerable distances, and made up in bundles so as to occupy the least room, a large amount of root is out of the question, but with private growers, whose requirements are limited, there will generally be no difficulty in making a selection like that here indicated.

Planting.—With those to whom this work may happen to be new, it may be necessary to point out that above all things it is requisite in the planting of these Brier stocks to be careful not to put them in too deeply, as the Brier is a surface rooter, and deep planting is fatal to it. A very slight examination as to its roots being located so near the surface in places where it establishes itself naturally, will do more to convince any one of the fact than anything that can be said. If, in planting, the roots are covered from 2 in. to 4 in. it will be sufficient, treading the earth so as to make it firm over them. The Brier grows much better in a strong, heavy soil than in such as is light and sandy, and, in planting Brier stocks with a view to Roses being budded upon them, so far as possible, land of this description should be chosen, at the same time it must be sufficiently dry, and if not naturally so it must be drained to effect this. The stocks may be planted in rows 1 ft. apart, and 2 ft. or 3 ft. between the rows; where room can be spared, the latter distance is preferable, as it leaves more space for cleaning the ground, and the operation of budding when it has to be performed. Immediately they are planted they will be none the worse for being secured in their positions. This can be best done by procuring some long, straight Hazel or Ash rods, such as are suitable for tall Scarlet Runner sticks, or even longer if obtainable, driving a stout stake into the ground at the end of the row of stocks, and another at the opposite end of the long rod already named, which must be tied horizontally to these upright sticks. Each stock can be then easily fastened to it with a bit of tar twine, proceeding in this way till the whole are secured. If the sticks and twine thus used are of fair quality they will last well for a couple of years or so until the Roses are ready for removal, and with the limited numbers required in private establishments it is better to treat them so than to leave them loosely blowing about in the wind.

Manetti Stocks.—Where Manetti stocks are used it is well at once to get them planted similarly to the above in the places where they are to be budded. This stock will succeed in soils of a much lighter description than required for the Dog Rose. It will also bear planting somewhat deeper, but with this, as all others, it is well to avoid covering the roots too deeply. There is one advantage in using both the Brier and the Manetti stocks, that is, their giving a succession of flowers better than where one stock alone is employed.

Rose Stocks from Cuttings.—Private growers, who annually bud even a small quantity of standards or half-standards, would do well to propagate each year a sufficient number of these from cuttings. Of the Brier especially, stocks raised in this way will be found to have a great deal more active feeding roots at the time they are budded than those that are had from the ordinary sources—the hedgerows or woods. The stocks so raised will also possess the very great advantage that they can be budded just when they have attained sufficient age and strength, in which case the union of the buds with the stock will be much more natural and reciprocal than that which occurs where the hard old Brier is headed back, and the buds are inserted in the shoots which break from it.

Treatment of Stock Cuttings.—In the preparation of the cuttings, all that is required is to take a sufficient quantity of stout young shoots of the current year's growth, cutting them into lengths of about 8 in. or 10 in., having a joint for the base of each, and inserting them to about half their depth in the ground. They may be put in in rows like anything of a similar character, 3 in. or 4 in. apart in the rows, with some 15 in. or 18 in. from row to row, which will allow of enough room for hoeing. In the spring when they commence growth, all the shoots from each must be rubbed off, excepting one, so as to direct the whole of the strength into that which is retained, for which choose the one best placed and likely to make a good clean growth.

Supports to Roses permanently Planted.—It is well at this time to go over the whole stock of permanently planted standard and half-standard Roses, to see that the stakes and ties which support and hold them are sufficient for the purpose, for it is not uncommon to see them left through the winter season broken loose from the stakes and swinging about in the wind, under the impression that little harm will arise from this on account of their being denuded of leaves and no growth going on, which is anything but correct, for when the heads are swayed about, it wrenches and strains the roots immediately at the collar of the plant, and should sufficient frost occur to congeal the earth around the stems, then the bark at this point is often chafed and injured.

Periodical taking up of Standard and Half-Standard Roses.—Budded Roses, especially those that are on Brier stocks, mostly require taking up every three years or so, with a view to completely removing the suckers that they usually more or less produce, and which can only be partially got at without taking up. Where this needs to be done, no time should be lost in its completion, as the further through the winter it is delayed, the more its effects will be apparent in the reduced quantity of bloom produced by the plants next summer. Where a considerable space is occupied in the form of a border or a quarter, it is well to commence at one end, taking a row up, and going over each plant, removing not only the suckers that exist, but the strong, sappy, root-like growth from which they proceed, and which, if examined, will be found furnished with plump, prominent buds ready for pushing up aboveground when growth commences in the spring. Even those who have not had much experience in Rose growing will very easily detect the difference between these thick, fleshy sucker roots, and the real feeding fibres that have been made, the whole of which latter should be as little mutilated or broken in taking up as can be, retaining them all, in replanting spreading them well out in their natural position. Whatever manure is required should be added at the time, digging the ground well; the removal of the plants giving an opportunity for doing this deeper and much more effectually than has been possible since they were last put in. The replanting, as well as immediately staking and tying, should be carried out all through as the work proceeds, by which means the roots will not be subjected to exposure to the weather or being twisted and broken in heeling-in, as is more or less inevitable if the whole of the plants were taken up and the ground all dug before any were returned to their places. The ground can be also left in a much more satisfactory condition through not being trampled upon to any injurious extent, as is unavoidable in planting after it has all been dug over.—T. Baines.

Indoor Plant Department.

Palms and Dracænas for Greenhouse Decoration.—Those who have not the convenience of a plant stove wherein a sufficient temperature can be maintained during the winter season to preserve in a healthy condition such plants as require continuous artificial heat, are frequently deterred from growing many subjects which otherwise they would cultivate; for instance, Palms, from their beauty and diversity of habit, would be almost certain to find a place in their collections, were it not for the general impression that they cannot be properly developed without a high temperature and roomy houses, neither of which are required for many handsome kinds; for even the large-growing species of Palms, more than most other plants, are capable of being kept in a small yet healthy state for years by simply restricting them in pot-room. The great increase in the production of these in recent times has so far reduced the price as to place them within the reach of all who feel disposed to possess them. They are very easily grown, but there is one essential point in connection with their well-being that it is necessary to impress upon those who have had no experience in their cultivation, and that is, the soil must never be allowed to become dry. This treatment is all the more requisite for any plant when its roots are much restricted in a small pot, but particularly with Palms, that are especially water-loving subjects. Amongst the most suitable Palms for growing in an ordinary greenhouse are the following:—Areca Baueri, A. monostachya, Cocos chilensis, C. Procopeana, C. coronata, Chamærops Fortunei, C. humilis, C. robusta, C. tomentosa, Seaforthia elegans, Thrinax parviflora, Kentia australis, K. Belmoreana, K. Fosteriana, K. Canterburyana, and Corypha australis. Although many of these species are of large size when fully developed, yet by managing them in the way above described, their growth can be kept within bounds. Those who have a Vinery will find that the above plants are particularly well adapted for growing under them, as they will afford the Palms the shade requisite to keep their leaves from being scorched in summer. They should be procured in 6-in. pots, and will not require for three or four years those of a larger size than 8 in. or 10 in. in diameter. If at any time the leaves assume a yellow hue they should have a few applications of manure water, which will impart to them a darker tint of green; but stimulants of this nature should not be used regularly to plants that are required to be kept in a comparatively small state, as their continued use would induce an increase in leaf growth to an extent that would necessitate larger pots than should be given them under the restricted conditions of growth to which they are subjected. There are several other plants of a like description that can with advantage be grown in a similar house; amongst which may be named the varieties of Dracæna that will succeed in a greenhouse through the winter, the best of which are D. australis, D. cannæfolia, D. lineata, D. rubra, and D. Veitchi. These can be cultivated in moderate-sized pots, from 8 in. to 12 in. in diameter, in which they will prosper for several years if carefully kept free from insects, especially red spider, to which they are somewhat liable in summer, and which, if left unmolested, soon turns the leaves yellow, and causes them to fall off prematurely. Another nearly allied, very handsome plant (Cordyline indivisa) is a fitting companion to the above; it is a much slower grower, and never attains in a cultivated state such a height as the Dracænas, but must have more root room allotted to it as it increases in size than those plants, yet it should not be overpotted. A 15-in. pot is large enough for a good-sized specimen, and care must be taken never to over-water it, especially during the autumn and winter, when the roots are at rest, or it will perish. During the dull season the soil should be kept as dry as is requisite in Pine-apple culture. Corresponding care must be taken to keep the drainage perfect; and the soil used in potting should be such that will insure the water passing readily through it.

Azaleas.—These will now be fast shedding their leaves, which, if they are in the desired condition, will turn yellow before falling off. The dull season and diminished leaf surface which the plants possess will now necessitate a reduction of water; that is, the soil must now be allowed to become drier before water is given than hitherto, otherwise the fine feeding roots are liable to perish. Keep all the plants required for late flowering as cool as can be without subjecting them to injury by frost.

Hard-wooded Plants.—To these admit air on all favourable occasions, but avoid cold draughts. Keep them occasionally turned round, especially in lean-to houses, or they get one-sided. Keep the whole of the stock near the glass, by which means the plants will bear standing closer together than if they were further from the light, but on no account crowd them. Forward, as time can be found, tying and training, being careful to remove all old ligatures that otherwise may cut the shoots as they gradually thicken. Clean out all dead leaves from the plants, and remove all green Moss from the surface of the pots, but on no account resort to the practice of surface-dressing by adding fresh soil to the top of the ball; this is frequently done periodically. No practice, however, can be worse, as the nearer to the surface, even partially exposed, the thick roots that proceed immediately from the collar of the plant are, the more likely the plants are to live long. Plants that have their surface roots buried too deeply generally go off at the collar.

Fuchsias, Calceolarias, and Cyclamens.—If pots of Fuchsias that were struck in August for flowering the ensuing spring are very full of roots, shift them into others 1 in. larger; if they are growing fast, nip out the points of the leading shoots, so as to induce the formation of side growths. See that the leaves are free from red spider, or they will turn yellow and fall off, spoiling the beauty of the plants. If these spring-blooming Fuchsias can be kept through the winter in a night temperature of 48° or 50° they will be all the better, as, so treated, they will make more growth and flower earlier than they otherwise would do; but if there is no convenience for keeping them in this way, they should be placed at the warmest end of the greenhouse. Herbaceous Calceolarias sown during summer must be shifted into larger pots as those they occupy get filled with roots; for, if allowed to become pot-bound, they will not grow freely afterwards. They require a more open description of soil than Pelargoniums; in addition to manure they should, therefore, have a fifth part rotten leaf-mould; the soil, too, should not be made so very hard in the pots, but only just pressed moderately firm with the fingers; the plants should also be kept much more moist at the roots than would do for Pelargoniums. Shrubby Calceolarias, which are so useful for flowering in pots, and, when well managed, last so much longer in bloom than the herbaceous kinds, should now receive attention; such as have grown to a considerable size, and are intended for coming into flower early in spring, ought to be placed in the pots in which they are to bloom; if the plants are large, they will bear shifting into 8-in. pots, using good rich loam, and treating them generally as advised for the herbaceous sorts. Primulas now coming into flower should be kept as near the glass as possible without touching it, as, thus situated, they will be able to bear the requisite quantity of water without being so subject to damp off as when further from the light. Give liquid manure to the earliest flowering plants every other time they need water; from 40° to 45° is a suitable heat for them at night during winter; for, thus kept, they are not nearly so liable to rot off at the collar as when grown in a lower temperature. Cyclamens will also flower satisfactorily in a house in which a similar temperature is maintained. As they will now be commencing to push up their flowers, they will be benefited by all the light that can be afforded them, for, when kept far from the glass, the flower stems often rot off at the bottom before the blossoms open.

Flower Garden.

Late-sown annuals, which are intended to stand the winter and flower early in spring, will be much benefited by a slight protection of some sort, such as a few Yew or Laurel boughs stuck amongst them; and beds of Fuchsias and other half-hardy plants (which have already been cut down by frost) should now be covered, to the depth of several inches, with tan, sawdust, or cinder-ashes. Attend very carefully now to the wants of bedding-out stock of all sorts, more particularly to that portion of it which may still occupy cold pits and frames. Frequently remove all dead and decaying leaves, and cover up whenever danger from frost is apprehended. Little water will be required at present, but where this is found to be really necessary, let it be supplied early on fine mild days, when air can be afterwards freely admitted, in order to dry the foliage, if possible, before nightfall; and, in structures in which there are means of applying fire-heat, this should be done occasionally during fine days, accompanied by abundant ventilation, to drive off as much as possible of the damp which, at this season, is so frequently injurious to such stock.

Herbaceous Plants.—Outdoor plants in bloom are very scarce during the present month, and consist chiefly of Christmas Roses, a few Chrysanthemums—as most of them that have not been protected have been destroyed in a great measure by frost—Pansies, Laurustinuses, Jasminum nudiflorum, Cydonia japonica (just beginning to expand), and a few others. Cut down Chrysanthemums when they have done flowering, and protect their roots by means of a layer of coal ashes; indeed, coal ashes are very useful for this purpose in general with herbaceous plants as a protection from frost, wet, and slugs, and they have always a neat and tidy appearance. Do not dig amongst this class of plants at present, merely cut away all decayed stems, strew some leaf soil or ashes over their crowns, clean the ground about them, and leave all undisturbed till early spring. Where any improvement is intended do not hesitate to accomplish it as long as the weather is favourable, for the more that is done in this way in winter the less will there be to do in the busy season of sowing and transplanting in spring. Many little Alpines and choice herbaceous plants are grown in frames in winter, chiefly to protect them from the excessive wet and changeableness of our climate, and to form specimens. These pot plants only require immunity from wet, plenty of ventilation, a cool temperature, and shelter from very hard frost.

Draining Lawns and Walks.—The heavy rainfall of the present autumn has been such as, in the case of lawns and pleasure grounds, to show where any defect or deficiency in the way of drainage exists; and where work of this nature has to be done, there is no better time than the present for carrying it out. Here, as in other parts of the garden, the depth to which the drains should be cut must be regulated by the character of the land. On lawns where the soil is retentive, enough open material, such as clinkers, brick rubbish, or burnt clay should be placed over the pipes in such quantity as to fill up to within 10 in. or 12 in. of the surface. By this means water will much more quickly find its way into the drains. The necessity for removing all stagnant water, consequent upon badly drained walks, is equally pressing. It frequently happens that however well such work has been done in the first instance, the drains get choked up in the course of time by the roots of trees. Where there are indications of any defects of this kind, they should at once be remedied, in all cases putting in tiles large enough to carry the water off as fast as it falls, even during the heaviest thunder showers. Any insufficiency in this respect entails a great deal of labour by the displacement of the gravel, and the accumulation of soil and sediment upon the surface, after which a walk never looks well until the gravel is turned, or some fresh material added to the top. For drains in paths the pipes should be always laid sufficiently deep to be out of the reach of the severest and most protracted frosts; for, when ordinary unglazed pipes are used, if frozen with the moisture which they must have absorbed in them, they are certain to be destroyed. Nothing less than a depth of 12 in. or 14 in. is enough to keep them out of harm's way from this cause.

Walk Making.—It is very common, especially in small suburban gardens to see the walks so badly made in the first instance, even when enough gravel has been used, as to render them soft and uncomfortable after any considerable amount of rain has fallen. This generally arises from the gravel being spread on them without care, rough and fine being indiscriminately mixed together. Where such a state of things exists, the best way is to begin at one end, and sift the whole over again, passing it first through a 1½-in. meshed riddle, and afterwards through a second of ¾-in. mesh, putting the large stones at the bottom immediately over the drains, the second size upon them, and the fine gravel on the surface. By this means, one of the greatest comforts in a garden may be secured—an efficient path, through which the water can quickly penetrate, leaving the surface dry and pleasant to walk upon. An essential in all walk-making is to have a sufficient number of "eyes" or gratings to carry off the surface water. Where the ground is hilly, these should be placed at short intervals apart, as, when the descent is quick, there is the most danger of the gravel being washed up during heavy rains. The formation of new walks, where required, should now be proceeded with, for at no time during the whole year can such work be carried out with greater advantage than at present, before the winter frosts set in.

Clearing up and Storing Leaves—Now that the leaves have, for the most part, fallen, means should be taken to clear up pleasure grounds for the winter. If possible, choose dry weather for sweeping lawns and gravel walks, for, not only can the work be done much more quickly when the ground is dry, but both Grass and gravel have a much better appearance than when clearing up is done during wet weather. Leaf-mould is so essential for mixing with potting soil and for other purposes, that it is always well to secure a good stock of leaves for this purpose, and such kinds as those of Oak and Beech are preferable to the softer sorts, like those of Chestnut, Plane, Elm, or Lime; but where the former cannot be had, the latter should not be rejected. In addition to their use as leaf-mould, as many as possible ought to be secured as will suffice in the spring to mix at the rate of one-half to an equal quantity of manure for hotbed making, as well as for forcing Seakale and Rhubarb during the winter. The leaves, as gathered, should be regularly stacked up in a heap in the frame ground, or some similar out-of-the-way corner, and enclosed, so as to prevent their being blown about. In gardens where leaves abound, it is much better to dig all in that lie amongst shrubs than to rake them off, as, when buried within reach of the roots of the shrubs, they materially assist them, especially if the roots of the latter are at all robbed by those of deciduous trees.

Kitchen Garden.

It is advisable to make a sowing of Cucumbers now, in order to furnish plants for potting out about the middle of next month, and if the seeds are soaked in warm water for fifteen or eighteen hours they will germinate much quicker than they otherwise would do: place the vessel containing the seeds on or near the hot-water pipes, so as to secure a steady temperature of 85° or 90°. I have frequently soaked them thus till the seeds sprouted, when I wanted to push the plants on, and when afterwards planted in pots of warm, light soil, the plants have appeared in three or four days. Almost every grower has some favourite Cucumber for early forcing, but, for the supply of a family, Telegraph is a reliable variety. Where, as in many places, glass structures are limited, Cucumbers may be successfully grown in pots or boxes in any house in which a suitable temperature is kept up, such as one in which flowers are forced. They may be elevated on back shelves and the shoots trained over the pathway or down the rafters. Thus treated they do not obstruct light from plants underneath them. Where new Potatoes of good flavour are required early, a few selected tubers of the old Ashleaf or any other good early variety may be potted in 4½-in. pots, one tuber in each pot, and placed in a Vinery or Peach house just started. Never allow more than one shoot to grow from each tuber; more growth only tends to produce small tubers and retard maturity. When they come up, and before they become pot-bound, either plant them in a prepared hotbed, or pot them into larger pots, with the view of growing them on in the house till the crop is fit for use. I prefer the former plan, when it can be conveniently done; but a fair amount of success may be obtained by the latter method, if the pots can be placed in a light position—success or failure depending, in fact, in a great measure, upon this; have all leaves raked up and stacked in a convenient place for making hotbeds, as the season advances. Oak leaves are the best for this purpose, and most lasting. If early Radishes and Carrots are required, a hotbed may now be made up for them, composed of about equal portions of leaves and stable manure; and, when the heat has become steady, apply about 5 in. of light sandy soil, and sow early French Horn Carrots in shallow drills 6 in. apart, and afterwards scatter thinly a few Radish seeds all over the surface. The Radishes will be drawn before the Carrots require the space. Whenever severe frost sets in, and it becomes necessary to use protecting materials for Celery and other crops, the plants should always be allowed to remain covered till everything is completely thawed.

Extracts from my Diary.

December 9.—Potting another batch of Potatoes that have been previously started in the Pine stove. Pruning first Muscat-house, and washing the paint with soft soap and hot water. Finishing pruning, and nailing Pears on east and west walls. Taking up Box edgings and re-making them.

Dec. 10.—Putting a few Herbaceous Calceolarias into their flowering pots. Getting more leaves into pot Vine pit, in order to increase the bottom-heat. Collecting horse manure for Mushroom beds, and turning over a large heap to sweeten. Getting up a few more clumps of Mint for forcing. Veitch's Autumn Self-protecting Broccoli still in fine condition.

Dec. 11.—Shifting Campanulas. Putting into gentle heat a few plants of Dielytra and Deutzia gracilis. Painting Muscat Vines, lightly forking over the surface of the border, and adding a little more fresh loam to it. Fumigating Cinerarias and Cucumbers to kill green fly. Clearing all leaves and rubbish out of all the spouting; also all catchpools, so that heavy storms may pass off freely.

Dec. 12.—Getting into the forcing-pits more Lily of the Valley, Hyacinths, Narcissi, Tulips, and Cyclamens. Covering up more Endive and Lettuce to blanch. Levelling ground in pleasure grounds, and laying down new turf. Looking over fruit room, and clearing away any fruits that are decaying.

Dec. 13.—Getting in 100 pots of Osborn's Forcing French Beans, and adding a little more earth to those already up. Forking up shrubbery borders, and getting them filled with spring flowering plants. Getting a pit filled with leaves in which to plunge Strawberry plants. Pushing on with trenching as fast as the weather will permit. Looking over the Pines, watering and tying up all that require it.

Dec. 14.—Clearing up pleasure grounds, and rolling down all gravel firmly. Looking over Grapes in bottles, removing any that are bad, and filling up the bottles where required. Thinning-out Mignonette, and tying up that which is in a more forward state. Fruit in use for dessert—Pines, Grapes, Pears, Apples, Medlars, and Nuts. —W. G. P., *Dorset.*

Late Peas.—Dr. Maclean I have found to be a good Pea for late use; the last dish gathered here this season was on October 25. With me this has not been a good season for late Peas.—W. Divers, *Wierton, near Maidstone.*

THE FRUIT GARDEN.

STEEL BRUSHES FOR FRUIT TREES.

As an improvement on the old-fashioned fruit-tree scraper, Dr. Lucas, Director of the Reutlingen Pomological Institution, recommends steel brushes, made as shown in the accompanying illustrations. He has found them very efficacious in removing Moss, Lichen, American blight, &c., and dislodging the different insects which infest the bark. According to the description of tree, and part to be scrubbed, should the preference be given to one or other kind of brush. Whilst in the case of young trees the curved brush (fig. 1), with handle and shorter wires, answers the purpose best, in that of older ones a somewhat larger brush—say 3 in. broad instead of 1½ in., by 11⅓ in. in length—with longer wires is found more useful; and, when it is desired to scrape the branches of tall trees, the operator has in fig. 2 a very suitable brush, a long rod being fitted into the hole. In the brushes made by Mr. Petzhold, of Chemmitz, in Saxony—those tested by Dr. Lucas—to meet all wants or fancies, the wires vary not only in length and strength, but also in arrangement, being sometimes in clusters or circles, and sometimes in rows. The price of the brushes ranges between 3s. and 4s. T. S.

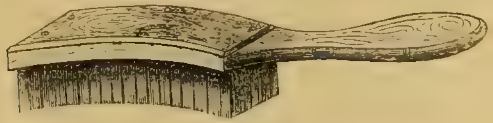


Fig 1.

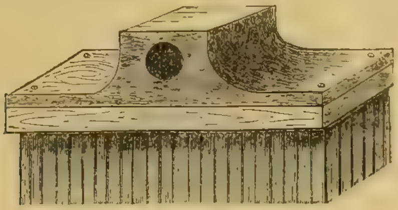


Fig 2.

FORMING NEW RASPBERRY PLANTATIONS.

Although the Raspberry is not a favourite fruit for dessert, it is much valued for preserving in various ways, and for such purposes I grow it extensively. The best way of increasing the stock of Raspberries is to make plants of the young side growths or suckers. Healthy old plants always throw out quantities of them during summer, and now, just when the leaves are falling, is the time to detach them with the view of making new plantations; but, after trying them in various ways, I do not like to make permanent plantations of them just as they are taken off. Allowing them to grow in what might be termed nursery beds for one season after they are detached from the parent plants is the best way of treating them. This being decided on, before beginning to take up the suckers a piece of rich ground should be selected in which to plant them as they are taken off. They will thrive in a partially shaded spot, provided it is exposed to the sun one-half of the day. For the first year I generally plant mine in front of a wall with an east aspect, so that they get the morning sun, but none in the afternoon. Where the ground is not previously rich, a good coating of manure should be spread over it and dug in as the plants are set. Roots with a single stem to them—and this is quite enough for any young plant—may be planted 6 in. asunder in rows 15 in. or 18 in. apart. In planting, the root should be placed about 3 in. below the surface, which should be firmly trodden. When this is done properly the young plants require no support the first season. The canes formed this year should be left as they are until spring, and just before they begin to grow each should be shortened back to 6 in. from the ground. This does not weaken the plant, but rather strengthens it, as it keeps it from flowering or bearing fruit, and throws the strength into the roots, from which the canes spring. Two, or at most three, canes are quite enough for any plant to bear during the first season; and it is well to reduce them always to this in order to give them a fair chance of being properly developed and ripened. Thick, well-ripened canes, about 4 ft. or 5 ft. high, are the kind most to be desired at the end of the season, as such will bear good crops the following year.

As soon as the leaves fall in autumn they may be planted in their permanent fruiting quarters, and this may be done throughout the winter until shortly before they start into growth. The ground to receive them should be trenched to the depth of 20 in. or 2 ft., and the whole of this depth should be well enriched with good manure. Where the ground has been properly prepared, and the after culture attended to in an ordinary way, Raspberries will bear good crops for ten or twelve years, therefore, securing good crops of fruit annually for this length of time is worth being careful in the preparation of the plantation at first. In trenching and manuring the ground the whole of it should be done before planting is begun. In planting, sometimes a row is put in one part of the garden and a row in another; but I do not approve of this plan, as it is inconvenient in more ways than one, especially as regards protecting the fruit. Half-a-dozen rows about 150 ft. long will yield a large quantity of fruit. Where the rows are together in one quarter they should be placed from 6 ft. to 8 ft. apart. In open positions the first distance is sufficient, in shady places the latter will answer the purpose. I have grown Raspberries with a stake to each root, training the stems around it, and I have also had them with the canes bent from root to root, tying them together so as to form an arch, but I now grow them nearly exclusively trained to a wood fence-like trellis. This consists of posts fixed in the ground 8 ft. apart and 5 ft. above ground, one rail being 6 in. from the top and another 3 ft. from the ground. The roots are planted along the bottom in a line with the rails 1 ft. apart. Two canes are taken from each root and tied 6 in. apart on the trellis. When a root dies a few more canes may be taken up from other roots to fill up the gap. As to pruning and training generally, it is a mistake to allow too many young canes to grow during the summer. After they are fairly above ground all the weakest should be cut away close to the ground or a little under it, leaving only those which are necessary to replace the old canes; of course where young stock is wanted shoots must be left, selecting such as come up farthest from the row, as they can be lifted without disturbing the old roots. Many injure their Raspberries by allowing the old canes, after they have done fruiting, and the younger ones for the following year, to grow into a close mass, especially in autumn, just at the time when the young canes require all the light and air available to mature their wood for bearing a full crop the following year. During September, after the fruit has been gathered, and when the canes which have produced it are beginning to wither, every one of them should be cut away and the young canes tied in their place. This is an excellent way of ripening them thoroughly, and one of the surest ways of insuring a heavy crop. Where the ground is in good order when they are planted, it is some years before they require more manure, and then it is much better to apply it as a top-dressing than to dig it in deeply about the roots. They should be top-dressed now, and in light soils it is well to put a good coating on and allow it to remain as mulching during the following summer. If it be bright weather when the fruit is ripening, it should be gathered every day, as it ripens fast and decays quickly, especially in showery weather. Cambrian.

ROOT-PRUNING FRUIT TREES.

As the time has arrived for renovating fruit plantations, where such a course is thought necessary, a few observations on root-pruning, replanting, and other work of that kind may not be unacceptable. I have a row of trained Pear trees in the garden here, which, not being in a satisfactory state, are being root-pruned and replanted. The style of training is worthy of notice on account of its practical utility. The whole area of the tree is fully exposed to sun and air, while, at the same time, it is protected against the violence of rough winds and the loss of fruits sustained thereby. The kind of training in question somewhat resembles the Palmette-Verrier style; at all events, it is an attempt at working the French system in a circular form, which is novel and much admired. The circular framework is 7 ft. 2 in. in diameter, formed of iron uprights 5 ft. 6 in. in height. These uprights, which are set in stone, have holes drilled in them at about 1 ft. apart to admit of stout iron hoops being run through them; the tops of the stones are of course only level with the surface of the ground. The tree is planted in the centre of the circle, and stands upright for about 1 ft. from the ground; the shoots are then drawn horizontally till they reach the outer side of the framework, when they are trained exactly like vertical cordons and bear their fruit on short sprays. Another plan adopted is to allow the upright shoot to grow level with the top of the trellis work, and train the branches downwards instead of upwards, but, judging by the result of five years' experience, I cannot say much for the latter plan, except from an ornamental point of view; whilst I have found the former answer admirably in every respect. Our trees are on an elevated site, and run parallel with one of the garden walks. When the roots of these trees came to be examined they were found to have been planted in a rough and ready manner, in a soil not over 2 ft. in depth, which lies on a bed of clear, yellow sand. Now, according to improved ideas of fruit growing, this would evidently be a case to be treated on its own merits, and not according to every-day practice. Modern experience would suggest that the entire body of sand be removed to a depth of from 18 in. to 2 ft. below the bottom of the natural soil, because it is a well-known fact that sand is a great absorber of moisture, and that any liquid or other water applied to the roots would filter away beyond their region in a soil which, by reason of its nature and porosity, is incapable of retention to any appreciable degree. It appeared, however, in this case that the general practice of the day had been acted upon, for I found, in addition to the sand, a thick layer of lime rubbish and broken slates laid under the roots, as if to make certain that the trees should be starved into fruit bearing. What particular virtue there is in broken slates, or to what extent they can be regarded as fertilisers, I dare not hazard an opinion. Even the retention of surface moisture was guarded against by elevating the trees above the natural ground level, which sloped to the east, and, therefore, required no artificial manipulation. The object of relating this practice is not to condemn it generally, but to show what mistaken views are sometimes entertained in regard to such matters, and how simple it is to misapply what would be very good practice under circumstances the reverse of those just referred to. Before the trees were lifted I had not anticipated such a condition of things at the root, which cleared up satisfactorily the cause of the fruit being below the ordinary standard in size, and without that substance which characterises good cultivation. The slate rubble and sand were, of course, removed, and fresh, healthy soil substituted, and the planting of the trees was so managed that the base of the bole was slightly below the ground level, leaving a cup or basin round the roots. Thus circumstanced, they will not only be benefited by natural rains, but they can also be copiously supplied with liquid manure after the crops are gathered, the object for which the operation was originally taken in hand. Opposite conditions, as regards position, soil, and subsoil, would be met by using the very means condemned in the case of light soils, sloping situations, and sandy subsoils. I have seen excellent crops of fruit obtained from soils naturally tenacious and retentive by planting the trees in lines on sloping ridges, keeping the roots on the surface, and feeding them there by means of mulchings, and by giving them supplies of liquid manure. Few cases are, however, alike in all respects, and hence the necessity for rational discrimination in carrying out projected improvements.

W. Hinds.

HARDINESS OF POT STRAWBERRIES.

Protecting pot Strawberries from frost is a matter upon which much stress is laid by some growers, but it has yet to be proved that the roots of such plants will not stand as much frost as the foliage without injury. Our plants are never placed in winter quarters (cold frames) till they have had two or three bites from frost. This season, about the beginning of November, they had 6° of frost and were frozen through, and for the last fourteen years I do not think there has been a season in which they have not been at times frozen hard. Yet we never missed a fine crop, nor did the plants show the least signs of injury. I remember, too, when at Dalkeith Gardens, when Mr. Thomson was there, about 1860, that all the Strawberries were housed in a long unheated Peach case, where, during a long frost, the thermometer registered (inside) 14°. The plants for a fortnight or more were hard frozen, many pots were broken; the balls of the plants expanded, so that they stood 1 in. or more above the rims of the pots, and when the thaw came they had all to be gone over and pressed down again. Yet no fear was felt for the plants, nor did they suffer injury; all fruited as well as usual, and this happened more than once there. Since then I have never felt any alarm about our plants getting frozen so long as they were not thawed by any artificial means. Mr. Cornhill says (p. 471) the injury is more likely to happen when the roots "become dry and frozen;" but for my part I would rather see the soil dry than wet when exposed to frost. I have always understood that frost was most destructive where there was moisture. The roots of Strawberry plants in pots are quite different from those of plants growing in the ground, which are soft and tender, comparatively, because they are deep in the ground; whereas the roots of pot plants are exposed to all the changes and vicissitudes of the weather, and are consequently proportionately hardier. I do not know what success may attend your correspondent's plan of growing his Strawberries two or three years in the same pots; but I much doubt the utility of the practice. Old plants, if shaken partly out and repotted about midsummer, will produce a good crop in the autumn; but keeping them on in the same pots for one or two years for regular forcing is new to me. Old pot Strawberries, like old pot Vines that have already been forced and cropped as heavily as they will bear, are not much worth, I am afraid. Growing first-rate plants from runners every year is simply a question of layering and potting in time, anywhere, I should think, between the Land's End and John O'Groats. In our late district the plants are not potted till the first week in August, but, by the time they are housed the balls are such a mass of roots that you might play at football with them. Whether in pots or planted out, my experience is that young plants propagated the summer previously always produce the finest fruit, and I am by no means the only one who has vouched for this. Referring to the hardiness of the roots again, I would ask how it is that outdoor plantations are not injured by frost? We have always planted out the greater portion of our forced plants, and, owing to the bushy nature of the roots, they rarely penetrate deeper than 9 in. or 12 in., the greater portion being close to the surface; yet the plants never suffer either from "cold, drying winds" or frost, though the roots must often be hard frozen, and they never fail to bear good crops. The permanent plantations may partially fail sometimes, but the old forced plants never do, though I do not say they are to be depended upon after the first, or at the most, the second year after planting out.

Wortley. J. Simpson.

CLIMATE OF THE NORTH OF FRANCE.

It is stated (p. 488) "that the climate of the north of France is an extremely difficult one for the fruit grower, and, on the whole, not one whit better than that of Kent and Sussex;" and, as usual, the English cultivator gets blamed for the inferiority of our hardy fruits compared with those of the French. Though your correspondent mentions the north of France, it is evident he is speaking of Paris and its neigbourhood. I certainly did think myself at one time, from what I had read, that there was not much difference between the two climates, but a visit to the north of France last August dispelled that illusion for ever. It is admitted on all hands that the past summer in England was an early one, and it is equally certain that the summer in France has been changeable and cool. The fact was commented on in the "Times," and every Frenchman to whom I put the question told the same tale. This being so, will your correspondent explain how it was that early in August grain was all cut and housed near Paris, and the stubble actually being ploughed, when in Kent and Surrey harvest had little more than begun? how it was that in and about Paris the Horse Chestnut was yellow and ripe, and about dropping off the trees, and the Spanish Chestnut proportionally forward, while in the south of England they were only filling? And will he further explain how the Bramble and Elderberry were dead ripe in Fontainebleau Forest when both were green and only swelling in the sunny lanes not far from Dover at least a week later. I gathered and eat both at Fontainebleau, and the Brambles were very large and fine. In this part of Yorkshire neither were ripe till late in October; but, above all, will your correspondent tell us how it was that Rivers' Early York Peach was quite ripe on a north wall, in the middle of August, not far from where I gathered the Blackberries, and other later sorts very nearly ripe (I saw and ate them), and that Morello Cherries had, at the same time, been long ripe and shrivelled, while in the south of England the Peach was not ripe on south walls, and Morello Cherries just changing colour, or a little more? I might also ask how Mr. Rose Charmeux, of Thomery, manages to force early Peaches into ripeness in January for the Paris market, when English growers, in the most favoured districts dare not think of forcing their earliest Peaches for two or three months later? These and numerous other signs of a superior climate strike the stranger at a glance, and, whatever the thermometers may say, I maintain that they indicate only one thing, and that is, that the climate of the north of France is very considerably better than ours, and that it explains as much as anything else, the difference in the quality of French and English hardy fruits.

Wortley. J. SIMPSON.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Black Hamburgh as a Late Grape.—Mr. Stevens has two houseful of this Grape just now ripe at Trentham, the foliage showing slightly the rich tints of autumn. The Grapes themselves are everything that one could desire, being as plump and fresh as Grapes in June. The fruit in another house is partially cut, and with this Grape Mr. Stevens seems to keep up his supplies without the use of coarser varieties.—GEO. BOLAS.

Fruit Trees in Autumn.—With reference to the remarks of "W. N." (p. 499) on manuring fruit trees in autumn, I would like to ask how he has proved, to his own satisfaction, that the roots of fruit trees are at work all winter, "storing vigour and strength," in order to carry the trees safely through the blooming period? Has he ever observed any difference in the size of fruit buds from the end of October to the middle of February, consequent upon the autumn applications of manure? I have always held and understood that all deciduous trees rested in winter, root and branch, and that the first signs of the roots moving was the rapid swelling of the fruit buds. Hence the practice usually followed in Vine forcing of getting root and branch to go on together. Now, as to the intentions of Nature, I think "W. N." has made another mistake. The protection to the roots during winter from the fallen leaves may be very serviceable, but what nourishment can trees at rest derive from 6 in. or 8 in. of leaves lying on the ground over their roots. Nature, I think, intends the leaves to lie all winter and rot, and, on the commencement of growth in spring, the roots to lay hold of the store of food thus provided for them, enabling them thereby to maintain their existence. —J. KNIGHT, *Reading.*

Grapes without Fire-heat.—I have seen several paragraphs in THE GARDEN lately on this subject, by which one would suppose there was some difficulty in producing good Grapes without fire-heat, but such is not my experience, though I find such to be the general impression. Some years ago I had a lean-to house, facing the east, in the north of London, in which were planted the following varieties: Muscat of Alexandria, Muscat Hamburgh, Golden Hamburgh, Black Hamburgh, and Barbarossa; they all produced good, well-ripened fruit, but the Muscats did not set well, and consequently the bunches were not always well-shaped. I now have a lean-to house facing the south-west, at Willesden. I have planted in an outside, prepared border Black Hamburgh, Muscat of Alexandria, Duke of Buccleuch, Madresfield Court, and Gros Colman, and this summer I had well-ripened bunches of Black Hamburgh, Duke of Buccleuch, Muscat of Alexandria, and Gros Colman—Madresfield Court has not come into bearing yet—without the least artificial heat. The Muscats were well set, and I had to thin out about two-thirds of the berries; they were ripe and some of them eaten the last week in August. I am careful not to give too much air in the spring, but the ventilators are often not closed in proper time. In winter the house is full of bedding plants, and last summer I had Cucumbers under the Vines.—AN AMATEUR.

A Prolific Bullace.—At page 435 a notice and engraving are given of a Bullace said to be very prolific in Essex, about which I should be glad to hear more particulars. In the neighbourhood in which I reside we have a very prolific Damson, which I have reason to believe had its origin very near to where I now write, and which reproduces itself to any extent by suckers, as does also one or two Bullaces of a green colour, but the black one is not so commonly met with. I have, however, heard of one in Sussex, and I once listened to an argument between a grower of this Bullace and one who patronised the Damson as regards the respective merits of each for filling the basket with good marketable fruit. The grower who upheld the black Bullace came, I think, from the neighbourhood of Mayfield, and he seemed to imply that his fruit was little known except in the district from which he came, and adduced as a proof of this being the case that a local nurseryman who had discovered its merits was propagating it largely. Now, if the Bullace you speak of readily reproduces itself by means of suckers, and is as fruitful as it is represented to be, it will be a very valuable addition to our fruit lists. On this and other matters I should like to learn a little more of the fruit of which you speak so highly, and also if it be only of local origin, and thereby likely not to succeed so well when carried away from its home, as some other fruits so treated have proved unsatisfactory.—A RETIRED GARDENER.

THE LATE LIVERPOOL CHRYSANTHEMUM SHOW.

It is well for the Chrysanthemum that it has the redeeming property of flowering at a season when anything in the shape of a flower is acceptable. On no other consideration but the above would this fine flower be for one moment tolerated in the painfully monotonous and conventional manner in which it was exhibited, as usual, on the above occasion. On entering that magnificent structure, St. George's Hall, the eye was immediately arrested by seeing spread over the area of the hall what appeared to be a multitude of circular shields, embossed in the most regular manner with knobs of gold, silver, or bronze—like trophies, all of one type, and all seemingly moulded by the same hand. Could they have been hung on the wall the illusion would have been perfect. These were Chrysanthemums, moulded and tortured into these everlasting circles for exhibition. Had I found on entering the hall the visitors standing on their heads the sight would have been quite as natural as the forms in which the plants were exhibited—a mechanical display of floral manufacture with only one pattern and design in the whole. Is it not possible to exhibit this flower in a more natural way than this? Could not the committee of management solve this problem by offering prizes for the Chrysanthemum grown in a natural way? Surely it is worth the trial. Certain I feel that nothing but a vitiated taste, fostered by continual example, would ever countenance these unnatural distortions, where every plant appears in a straight jacket, and every individual bloom in wire handcuffs, almost rivalling the dwarfed absurdities of China and Japan. Why should the foliage of a plant be objected to? In all the floral circles exhibited no leaves were visible; all were sedulously tucked in under the frames, forming a kind of background, on which the balls of colour stood out in ridiculous relief; the beautiful undulated foliage of the crippled plants seemed totally ignored. If there be anything rational, pleasant, or enjoyable in floriculture, let it, as far as practicable, be carried to the exhibition tent; and let it not be seen that growing plants for their own sakes in the garden is one thing, and that growing them for show is only for the sake of the exhibitors. Foliage and flowers should always go together as Nature intended them. Nature is generally profuse in her bounties. Flowers are generally produced in bunches, wreaths, festoons, and garlands, and the Chrysanthemum is one of those flowers concerning which it may be said, that "the earth brought forth by handfuls." Nevertheless, in the trained exhibition specimens it would be unpardonable to see two blooms in contact, and every individual bloom must stand at a measured distance from its neighbour with a studied kind of "don't touch me" isolation. It is a pleasing circumstance to note, that the committee of management seemed fully alive to the effect produced by the monotonous display of the Chrysanthemum as commonly exhibited, and made a praiseworthy attempt to modify it. Sorry am I, however, to put it on record that the attempt was a mistake. The body of the vast Hall was transformed into a kind of *parterre*, and five large, octangular or polygonal beds (a larger one in the centre and four smaller ones in the angles), fenced round with a neat, low railing or guard on an elevated kerb a few inches high, gave these spaces a truly gardenesque appearance. The kerb and a space about 18 in. wide were covered with green baize, which gave these compartments the appearance of having a margin of fresh turf all round, effectually neutralising the gorgeous encaustic floor. The compartments were partly filled with large Tree and other fine Ferns, among which were placed, at regular distances apart, the flat, shield-like Chrysanthemums in sixes, and this spoiled the whole. The contrast between the manufactured-looking masses of flowers and the natural, drooping, arching Ferns, was painfully violent. The Ferns seemed ashamed, as it were, of their companions. Imagine a noble Davallia Mooreana drooping over a gaudy Chrysanthemum. It is, to say the least of it, injudicious to associate perfection with deformity, with the idea of mitigating the latter; both are sure to suffer by the contrast. Of the cut collections of Chrysanthemums I can say but little. They were magnificent examples of the perfection to which this fine flower has been brought; but here, again, I must reiterate that gardening and exhibiting were totally distinct from each other. The blooms here, as elsewhere, were shown in the stereotyped manner—on a white ground without a particle of foliage; handsome balls of colour, dressed, most of them, in paper filigree collars, very many of them with their centres gouged out, and stuck in tin tubes to show off their rotundity. How different all these fine blooms would have looked had a sprig or two of foliage accompanied each bloom. I never considered single bloom showing to be a means to any desirable end; and I never yet saw them exhibited in a satisfactory manner, a remark which also applies to Roses, Dahlias, and other flowers. Even the Verbena would be enhanced by being shown along with a little of its own foliage; but at present all is bloom! bloom! bloom! It would be a curious sight to see the manufactory of these enormous blooms. What a regiment of skeleton-looking plants an exhibitor of twenty-four must have, each carrying one flower! and then talk of floral beauty! I must not omit to mention that at this great representative show of the Chrysanthemum in the north of England there was an attempt at variety in the form of standards; and, stiff and formal as they were, they were quite a relief to the ever-recurring flat shields. I am proud to read in The Garden that this formality is, in some degree, modified in the south. I feel certain that these remarks will make me many enemies among exhibitors, but I trust that many will also take these observations as an attempt to elevate floral exhibitions above what too often makes them contemptible. I shall reserve for another opportunity the question, Whether such vast and gorgeous edifices as St. George's Hall are the proper places in which to hold a floral exhibition? T. Williams.

Ormskirk.

ROSES & BOUVARDIAS IN MARKET GARDENS.

Fairy Roses.—These are grown by thousands by several market gardeners about London. They are raised from the young tops of plants inserted in sharp sandy soil in May and June. They are placed in a warm, close, house or pit until rooted, when they are potted on in good sandy loam until they are in 5-in. pots. They are then grown in airy houses, and by the following spring they are loaded with buds and rosy-coloured blossoms, the dense masses of green leaves hiding the pots. Such plants as these find a ready sale in the markets, great numbers of them being cut up and used in bouquets, the small green leaves and buds being very effective among light-coloured flowers. During the time in which the plants are coming into bloom they are arranged on stages, receive abundance of water, and are frequently fumigated to keep down insects. Many thousands of them can be placed in a comparatively small house, and when coming into bloom they present a most striking feature. In the centre of each pot is placed a stake, to which to tie the leading shoots and thus induce the plants to assume a pyramidal, though by no means a formal, shape. They grow about 9 in. high and about as much through at the base, and they form ornamental objects for some time even in a sitting room.

Moss Roses.—In July these form one of the most attractive features in our flower markets, large piles, baskets, and bunches being found at every turn. The white kind, though not common, is used for bouquets, and two or three red and pink sorts are supplied in enormous quantities; indeed, there is always a great demand for Moss Roses in our markets. The old Provence Roses, too, are, during summer, very plentiful and in great demand, and buds of the White Provence are very beautiful. The common Moss Rose, so well known in our cottage gardens, is not very largely cultivated by market gardeners, the reason being that it is neither robust nor floriferous enough for market purposes. The variety most preferred is a deep red kind, which, though less mossy than the common sort, produces blooms in much greater abundance, strong shoots bearing from eight to ten buds, all of which open well, at one time, but they are never allowed to be too much expanded before they are cut, as in that case the mossy portion would be less noticeable and the value thereby reduced. To supply the great demand for Moss Roses, many market gardeners round London devote several acres of land to their culture. They are, however, seldom all grown on one spot, but are distributed about in patches, some being in a warm border sheltered on the north by a wall, hedge, or row of fruit trees, others growing right under orchard trees, and the main crop is usually found in open quarters. This arrangement is admirable, inasmuch as it affords a lengthened season of cutting. The border plants furnish the earliest blooms. These are succeeded by those under the fruit trees; and the late blooms are furnished from plants unprotected. Moss Roses are cultivated much after the same fashion as the Raspberry, with this difference, that the old wood of the Roses bears a crop two or three years in succession before it is cut away, whilst that of the Raspberry is cut away yearly. Well established plants are, however, so productive of young growths at their bases, that it is found necessary to keep the bushes well thinned of the old wood as well as the weakest of the young shoots. Moss Roses in market gardens are grown on their own roots, and probably no form of budding or grafting on any kind of stock would give the fine results obtained from these plants. They thrive well under orchard trees, and form one of the most remunerative of under crops, for, with the shelter which the overhanging boughs afford them, frost does them but little damage, although those growing in open quarters often suffer severely from late spring frosts. The plan by which the plants are sometimes increased is to lift the old stools and strip off the outside shoots, which are freely produced, and plant them in rows 2 ft. apart each way in good soil. During the first two years after planting dwarf-growing vegetable crops are sometimes taken from between the rows, but after that time, if the Roses have done well, they require all the space. During winter, as already stated, a portion of the old wood and the weakest of the young growths are removed. Robust shoots, too, are shortened back, the soil is lightly forked over, and a good mulching of rotten manure applied. In this state the plants remain until the buds are ready for cutting, when they are gathered every other morning for market, the whole truss being removed at the same time with a few leaves attached. Some growers plant Moss Roses between bush fruit trees, but it is a bad practice, inasmuch as in a short time they form a complete thicket, much to the injury of both crops. Where no fruit bushes exist the rows are intercropped with Brussels Sprouts, Shallots, Broccoli, or some similar crop. The Rose trees after blooming are sometimes layered on both sides of the row and firmly pegged down; and, during the summer, these layers, which will have rooted, are lifted, and after being trimmed are planted in rows, as before described. By this method healthy young plants are obtained without in any way destroying the existing plantations. Moss Roses and Pheasant's-eye Narcissus are sometimes grown in rows alternately. The Narcissi are generally over before the Roses are in leaf, and thus neither crop is in any way injured. In the middle of July the streets of London are full of women selling Moss Roses which have been surrounded by a little sprig of Fern or their own leaves, and wired ready for the coat. The sale is immense, and those women gain good profits thereby. The usual price is 1d. each, or a bunch of from eight to ten may be bought early in the morning for 6d. in the height of the Rose season.

Bouvardias.—These are popular plants in our flower markets, either the plants themselves or their blooms being offered for sale during the greater part of the year. For bouquet making the white-flowered kinds are especially useful; indeed, seldom is a bouquet made which does not contain some Bouvardia blossoms. The old B. jasminiflora still remains one of the best kinds for market purposes. Its dwarf, compact habit of growth and its floriferous qualities, together with its easy culture, render it a favourite with everyone. One grower alone near London yearly disposes of from 20,000 to 30,000 plants of it; others grow it more for its blooms, and in that case it is grown in larger pots. The only scarlet-flowered kind grown to any extent is B. Hogarthi, which in habit resembles B. jasminiflora; it produces abundance of bright blossoms which are very effective amongst white flowers. For spring-flowering, a large white-flowered kind named B. jasminiflora corymbiflora is now grown to some extent. Its flowers are deliciously fragrant and much larger than those of any other kind in cultivation. Its chief value, however, is its blossoms in a cut state, for the plant is too rampant a grower ever to become a good market plant; only bushy little plants in 6-in. pots laden with blooms find favour in Covent Garden. The difference in the plants of Bouvardias as seen in Covent Garden and those usually met with in private gardens is very marked. Country growers, as a rule, use the knife too sparingly in the case of Bouvardias, and, therefore, instead of dwarf bushy specimens clothed with healthy green foliage down to the rims of the pots, as seen in the market, we find long, spindly plants with miserable-looking shrivelled-up leaves, and a few solitary sprays of flowers. I do not mean to say that all grow such miserable plants, but, as a rule, few good ones can be found in private gardens. Messrs. Low & Co., of Clapton, are the largest cultivators of Bouvardias in pots, and the way in which they grow them is as follows: In autumn old plants which have done flowering are cut down, nearly close to the pot, and placed in a moderately cool, dry temperature. After Christmas is over a little more heat is given them, and they are frequently syringed overhead; this has the effect of starting into growth a number of shoots from the bases of the plants. These, when sufficiently firm, are taken off, made into cuttings, inserted singly in 3-in. pots, and plunged in Cocoa-nut fibre on a gentle bottom-heat. These cuttings, under favourable circumstances, soon strike root, when they are potted in 5-in. and 6-in. pots in good fibrous loam and leaf-mould or rotten manure. As they advance in growth they are subjected to a cooler and more airy temperature than that in which they were struck, and when well established all the light, air, and sunshine possible are admitted to them, and they receive copious supplies of water at their roots. From these plants cuttings are taken with which to form a successional batch of plants; they are taken off when the plants have made three or four leaves, the two lower joints only being left on the plants. From these joints strong shoots are soon emitted; these when 4 in. or 5 in. long are also stopped, and this operation is carried on in the same manner for four or five times, each set of cuttings being treated in the same way. Those struck first in the year make excellent bushy-flowering plants by the following autumn, and the last taken off, which is in August and September, make good plants to bloom in the succeeding spring. The old plants, from which the cuttings were first taken, are also shaken out and potted, and they make bushy, well-flowered plants early in the summer. In order to make large specimens, which, however, is seldom done in market gardens (except for supplying cut blooms), old plants are cut back year after year and shaken out and repotted. During summer Bouvardias are grown in cool houses or pits, and sometimes in temporary frames, but in autumn, winter, and spring a moist, airy temperature of from 50° to 55° is maintained, excepting in severe weather, when a little lower temperature does not injure them. During late years some growers plant out their Bouvardias in the open air in summer, a plan by which good plants may be obtained with less labour and expense than in the case of those grown in pots. It, however, becomes a question whether they are so valuable to the buyer as well-established pot plants, but that, with growers for market, stands for nothing. For planting out cuttings are inserted early in February, stopped in the same way as before mentioned, and, after being duly hardened off, are planted out about 2 ft. apart in well-prepared ground the first week in June. During summer they are kept well supplied with manure water, the surface soil is kept well stirred with the hoe, and sometimes a mulching of manure is applied. In the first week of September, when the shoots show bloom, the plants are carefully lifted and potted, and, after being well watered overhead and at the roots, are placed in cold frames, and kept close and shaded until re-established; after that they are again exposed to air and sunshine, and when the weather gets cold they are placed in houses or warm pits near the glass. By this means strong, bushy, well-flowered specimens are obtained during the winter months which need no stalking or support in any way. Indeed, under no circumstances do market growers stake Bouvardias, beyond placing a neat deal stick in the centre of each plant, so as to support the branches in a manner to form neat, but by no means formal, conical or pyramidal-shaped plants. C. W. S.

DROUGHT-RESISTING ROSE STOCK.

I am afraid that what I wrote lately in The Garden has led some of your readers to conclusions which I certainly did not intend to suggest—viz., that the wild Portuguese Rose stock mentioned at p. 218, resists drought better than the Brier. I cannot answer for its doing so. It certainly resists the scorching heat of the sun better than the Brier does, but this is quite another matter. I will try to explain my meaning. In this part of Portugal not a drop of rain falls from June to September, and as there are no dews during these months, and plenty of hot dry winds, one can say without exaggeration that we have three months at least of absolute drought every summer, when gardens must be continually and copiously watered. Kitchen gardens, orchards, Orange and Lemon groves are irrigated. Our Rose trees are thus not exposed to positive drought; but all the watering and mulching in the world will not prevent the fiery summer sun from striking in full force on the bare Brier stocks, and that is what plays such havoc with them; and it is in this particular that we find the new stock does better. As a rule I am inclined to believe that no budded Rose stock will resist drought, however well the stock may do so in its natural unbudded state. I have a large piece of ground on a hill side, therefore naturally drained. The soil is of a stiff, red, argilous nature, and the place is planted with trees and shrubs, combined with a sort of wild garden. During summer it is positively nothing but a desolate parched up wilderness, for the plants are merely watered during the first summer or so, that is until they get a firm hold of the ground, after which no cultivation of any kind is given to them. Once the autumn rains come on the plants look up immediately. The foliage is all that can be desired. Flowers we have in abundance, and so they continue until the summer comes round again, which is in reality their time of repose. Of course many plants will not stand this rough treatment, but we have many we can fall back upon for the purpose. Let me mention the

Myrtle, Bay Laurel, Box, Pittosporums, Brooms, Arbutus, Ruscus, Brier, Manetti, and many of the old Roses, including some of the Hybrid Perpetuals, such as La Reine, which does wonderfully, on its own roots of course. Sweet Peas sow themselves and flower in profusion. Belladonna and Guernsey Lilies, Iris, Narcissus and Oxalis are quite at home. All these and many more succeed under three months of absolute drought, and a burning sun into the bargain; but I should never expect a budded Rose to stand this treatment. What is said about the constitution of modern Roses is very much to the purpose, for there can be no doubt that, however improved the flowers may be, many of the new Hybrid Perpetuals have fallen off in more than a proportionate degree as regards vigour and constitution. We ought not, therefore, to abandon the old Roses, which for many purposes are superior to the new, and I am sorry to say I meet with great difficulty in procuring them. Moreover, almost all these modern Hybrid Perpetuals are perpetuals only in name, at least in this climate. Not so the trees, they are perfectly evergreen here, and flower almost all the year round—that is I can always count on a few Tea Rose buds if I require them. I have another complaint to make: many of the new Teas are so in all but one very essential point; there is not the faintest tea scent about them. C. T.

The Guelder Rose.—This being a suitable time for planting trees and shrubs of all kinds, attention may be usefully directed to this very ornamental and effective flowering plant, which, when its merits are considered, is perhaps less extensively planted than it ought to be. It is no recent introduction; on the contrary, it has been more or less cultivated in this and other European countries for many years. It is the sterile form of the Viburnum Opulus, and is variously known as the Boule de Neige, or Snowball tree, Whitsun Bush, Rose Elder, King's Crown, &c. It is a hardy, deciduous, flowering shrub, of rapid development, and is by no means particular as to soil and situation. It also readily submits to cutting back, in cases where the plants may have attained undue dimensions, and when this is found necessary, the operation should be performed soon after the plants have ceased to flower. The flowering season is during May and June, and at that time the mixed shrubbery can hardly boast of more beautiful objects than specimens of this plant profusely loaded with large globular trusses of pure white flowers, that so well sustain its most popular name of Snowball tree. On close inspection it will be found that the individual blooms composing the truss or ball are entirely destitute of stamens and pistils; consequently, no seed is produced, but the plant is readily increased by means of cuttings or layers. In addition to its use as an ornamental plant for the shrubbery border, it is also found to be useful for purposes of forcing, as it can easily be induced to produce its flowers during winter and early spring, when white flowers are always so acceptable. Plants of it to be used for this purpose should be annually transplanted and kept cut into a desirable form and size, and plants intended for forcing during the ensuing winter should be lifted and potted in October, sheltered from frost in any cool structure, and introduced to the forcing house as required.—P. Grieve, *Culford, Bury St. Edmunds.*

Wintering Bedding Calceolarias.—The uninitiated are very apt to err in the winter treatment of these plants. They should by no means be introduced into a dry, airy structure, but be kept in a brick pit, leaving air on constantly, and closing and covering them over in sharp weather. In February dip the tops in Tobacco water, to kill green fly; harden off, and plant out early in April, covering each plant with a flower-pot on frosty nights. Such treatment will ensure a hardy constitution and vigorous growth, and will reduce the ravages of the Calceolaria disease to a minimum.—J. Cornhill.

Perpetual Carnations Planted Out.—I think it is not generally known that these are quite as hardy as the common Clove or exhibition Carnation—at least, as hardy as the latter. I plant out all the small plants and others I do not want to pot, and all the old plants that have been grown in pots after flowering, and I find that all stand the ordeal as well as any variety we have planted out. The tree or perpetual varieties are to the others what a summer Rose is to a hybrid perpetual. We get more or less blooms through the summer and autumn; indeed, by planting a goodly number of them, we may depend that whenever a Rosebud can be got we may have a Carnation as well; and, unlike the Rose, if the plants throw up a fine stock of buds too late to be reasonably expected to open well, we can pot them, and place them where they will open. My advice, then, is to plant plenty of the perpetual varieties.—"Field."

NOTES FROM KEW.

Hardy Shrub.—Quite uninjured by the wet and frosts we have lately experienced, Elæagnus glabra is producing in great abundance its fragrant blossoms; these, though not showy, make the plant well worthy of mention, not only by reason of their sweet scent and numbers, but also on account of their lasting so long during the dull, late autumn season. This Japanese shrub makes a dense bush below and above, throws out yearly long, straggling shoots, which are of a deep red-brown colour because of their dense covering of rusty scales; the old leaves, however, become smooth above as they grow older, and then assume a very deep green colour.

Greenhouse Plants.—At present one of the most distinct and handsome of plants for cool house decoration is Clivia Gardeni, a South African herb, found on tracts near the Great Fish River; it flowers very freely during the winter months, and remains a considerable time in full beauty. Its leaves are long, dark green, and strap shaped, and its stout, erect scapes bear many-flowered umbels of curved blossoms, about 2 in. in length, which are a dull orange or brick red passing into yellow and again becoming greenish near the somewhat funnel-shaped mouth. Antholyza prælta, another Cape plant, is also well worth growing; it has upright, sword-shaped leaves, of a pleasing light green colour, and tall stems bearing numerous orange-scarlet flowers; this plant is of the easiest cultivation, merely requiring a season of rest, like most of its relations from the same region, and to be kept free from frost. Raphiolepis salicifolia is a pretty Rosaceous shrub, with narrow, toothed leaves; the twigs are terminated by panicles of pleasing blossoms, the white corollas of which contrast well with the reddish calyces. Scarcely requiring more than shelter from frost, this would make a good corridor plant, valuable from its flowering at a somewhat dull season. Malvastrum capense, a charming South African Mallow, is in good flower; it is a neat-growing little bush (almost continually in bloom), with small leaves and white blossoms tinged with rose. Bucklandia populnea attains a height of about 80 ft., and is one of the finest trees of the temperate Himalayas from Nepaul to Bhotan, where it grows at elevations of from 5000 ft. to 8000 ft.; it is also found on the Khasia Hills at elevations of from 4000 ft. to 6000 ft. It is quite a recent introduction to British gardens, and would make a handsome conservatory plant. It has large, heart-shaped leaves, light green with reddish veins, the under surface of the young leaves being of a warm flesh colour. Sir Joseph—then Dr.—Hooker, in his "Journal of a Naturalist in the Himalayas," thus speaks of it: "A magnificent tree of Bucklandia, one of the most beautiful evergreens in Sikkim, grew near this village (Headon); it had a trunk 21 ft. 7 in. in girth at 5 ft. from the ground, and was unbranched for 40 ft. Ferns and the beautiful air-plant, Cœlogyne Wallichi, grew on its branches with other Orchids, while Clematis and Stauntonia climbed the trunk." The author adds that this superb tree, which was then a great *desideratum* in our gardens, would probably thrive in the open air in the warm west of England. Its wood is brown and not valuable as timber, but the thick, bright, glossy, evergreen foliage is particularly handsome, and so is the form of the crown. Yucca Mooreana is one of the few plants now in flower in Mr. Peacock's fine succulent collection exhibited in one of the octagonal compartments of the winter garden; it has large, dark green, rigid, spreading leaves, and a large panicle of white blossoms. Gasteria Peacocki is the only other plant of importance in bloom; it is one of the most handsome, in point of beauty of the flowers, of all the Gasterias. The slightly curved leaves are deeply channelled in the middle, and of a light green colour, having here and there whitish spots.

Stove Plants.—Scutellaria violacea robusta is a very neat-habited and desirable flowering plant; it grows about 12 in. or 18 in. high, and every one of its shoots is terminated by a long, upright raceme of beautiful violet-blue blossoms. Pitcairnia australis deserves cultivation, even in very select collections of stove plants; it is a very handsome Chilian Bromeliad with long, glossy, light green, strap-shaped leaves, and an upright scape, bearing a fine spike of numerous brilliant scarlet blossoms, each measuring nearly 2 in. in length.—†

NOTES OF THE WEEK.

Yuccas in the Isle of Wight.—Captain Lowther has in his garden at Thornton, Ryde, a large and fine specimen of Y. gloriosa now in flower. It is a single plant about fourteen or fifteen years old, and it is bearing eleven spikes of flowers, not all, however, fully expanded. Its dimensions are as follows: circumference about 5 ft. from the ground, 24 ft.; girth of trunk at ground, 1 ft. 10 in., height (highest foliage) 6 ft. 6 in.; to top of flower-stalks, 8 ft. 6 in.

New Double White Pelargonium.—What is likely to prove the best double white Pelargonium which we have yet seen is now flowering in Messrs. Carters' nursery at Forest Hill. It is of dwarf habit, and does not grow so vigorously as most of the double zonal Pelargoniums, whilst its flowers are produced very freely, and they are very double and pure white. For winter flowering it will, doubtless, prove valuable. It has not yet been named.

Cycas revoluta in Fruit.—A large specimen of this Cycas, which is sometimes called, but erroneously, the Sago Palm, is now fruiting freely in Mr. Laing's nursery at Forest Hill. The fruit, which is bright red, and covered with a white woolly tomentum, is produced in opposite pairs sideways on stalks of a brown tough character. The plant in question bears some hundreds of fruits, which are about as large as Chestnuts, and it is also throwing up a fine whorl of new leaves.

Adiantum palmatum.—When better known than it is, this Fern promises to be more largely grown than even A. Farleyense. Its pinnæ resemble those of A. Farleyense, except that they are set wider apart, on dark, wiry stems, and are of a deep green colour. It is much hardier than A. Farleyense; therefore, it will be more useful for indoor decoration, and it is, moreover, on account of its less dense habit, not so likely to be affected by damp. Grown in baskets or vases, it is exceedingly effective, and it will also make an excellent pot plant for table decoration. We saw lately good examples of it in the Holloway nurseries.

Dahlia imperialis.—One of the most interesting and beautiful plants in flower at Kew at the present time is this truly Imperial Dahlia, some specimens of which are flowering freely in the Palm house. It is difficult to intelligibly describe without an artist's aid the chaste beauty of its flowers, so different are they from those of the ordinary garden varieties. The flowers, which are single, are borne in loose terminal clusters, and assume a somewhat nodding position. They measure about 6 in. across, and have many narrow pointed ray florets of a pure white colour, tinted with carmine at the base, colours which contrast finely with the bright yellow centre. The foliage, too, is handsome, being much larger and more divided than that of the ordinary Dahlia. Altogether, it is a stately plant, forming specimens from 6 ft. to 8 ft., though perhaps this is a point which deters many from growing it, as it requires the protection of glass in order to flower it, though it may be grown outside until early frosts set in. It is to be regretted that this fine plant produces its flowers so late that they cannot be enjoyed in the open air in our climate. Something, however, might possibly be done in the way of hybridising it with earlier and dwarfer species, and notably with the beautiful little D. glabrata, which, being of very dwarf habit, would probably infuse a dwarfer growth into the D. imperialis, while the colour of the flowers might not be materially affected by it as those of glabrata are almost pure white, varying to deep mauve. A coloured illustration of this Dahlia, with descriptions of other species, will be found in Vol. XII. of The Garden.—W.

Orchids in Flower at York.—In the houses devoted to Orchids, in Messrs. Backhouse's establishment at York, I observed the other day the following kinds in flower, viz.:—Cattleya maxima, a considerable number of fine healthy plants, apparently all imported; their flowers varied considerably, from a light delicate pink to deep rose, the lip being white and heavily veined with deep rosy purple. They also varied in the width of the petals and labellum. Some of the varieties were extremely handsome. Cattleya Penilli was also in flower; it is quite distinct from C. maxima, being much dwarfer (4 in. to 6 in. high); it is indeed a little gem. The flowers are almost circular, of a lovely purple colour with a deep crimson lip. Another kind which attracted attention was Oncidium Rogersi, a species sufficient in itself to enliven any house, so bright and numerous are its blossoms. They are borne on robust, branching, arching stems from 20 in. to 30 in. long, and numbering as many as from thirty to ninety each, from 1½ in. to 2 in. in diameter. I also noticed a singularly beautiful Lady's Slipper—Cypripedium Hartwegi, which is a native of the West Indies. It is distinguishable from most other kinds by the large purplish bracts, which are arranged alternately throughout the entire length of the flower stem. The flowers, too, are singularly beautiful; in colour they are of an almost indescribable combination of green, yellow and cream, prettily veined with light purple. The petals are long, slightly twisted, merging near the apex into deep purple. Pleiones had been in fine condition about ten days ago, and there were still a few scattered blossoms on three or four species. I also noticed many fine masses of the true Odontoglossum Rossi majus, the flowers of which are white, the sepals and base of the petals being heavily blotched with chocolate pink. They have a scent resembling that of violets.—F. A. P.

Orchids Effectively Arranged.—A fine effect is produced in one of the Orchid houses in Messrs. Rollisson's nursery, Tooting, by intermixing numerous well-grown flowering plants of Lælia autumnalis and Lady's-slippers amongst a thicket of strong spikes of Calanthe vestita, the whole being backed up by Vandas and similar tall-growing Orchids.

Open-air Flowers in December.—Stocks, Pansies, and, best of all, the old China Roses, are lovely here on, or sheltered by sunny walls. A plant of the old crimson China Rose is a picture, having on it over a hundred open flowers and buds. Clumps of scarlet Tritomas and feathery Pampas Grass also preserve their beauty wonderfully, although we have had a snowstorm or two and several degrees of frost.—F. W. B., *Oakham.*

Absorption of Moisture by the Green Parts of Plants.—In another column will be found notes of a lecture delivered by the Rev. G. Henslow on this subject. It appears that earlier experimenters were fully persuaded that leaves could and did absorb dew and rain. Duchartre, in 1857, reversed this view. Mr. Henslow now maintains, from his own experiments, that absorption does take place soon after the sun has risen, and under other predisposing circumstances; thus the common notion of cultivators is right, and the late current teaching of science wrong.

Neja gracilis.—This graceful little plant is still flowering freely in Mr. Parker's nursery at Tooting. Besides being one of the best rock plants in cultivation, it is also attractive in narrow borders, and it would probably make a good winter-flowering pot plant indoors. It blooms all through the summer and autumn, and until very severe frosts occur in winter.

Odontoglossum Warczewiczi.—This rare and pretty Orchid is now in flower in Mr. Williams' nursery at Holloway. Its blossoms appear to be intermediate between those of O. vexillarium and O. Roezli, but they are different in form to either of these kinds. It will be appreciated by Orchid growers if only for the sake of producing variety.

Primulas at Forest Hill.—Messrs. Carter & Co. have just now, considering the earliness of the season, a large and attractive display of single-flowered Primulas in their nursery at Forest Hill. The blooms are large and well varied in colour, and the plants are dwarf and bushy, some of them having very ornamental Fern-like foliage. They are the produce of seed sown early in summer, and their richly-coloured flowers serve to show the excellence of the "strain."

Zonal Pelargoniums in Winter.—The fine displays of cut blooms of zonal Pelargoniums exhibited lately at South Kensington and elsewhere by Mr. Cannell, Swanley, serve to illustrate, not only to what perfection these flowers have been brought, but also what fine displays well-managed plants of selected sorts are capable of affording at this dull season of the year. Every one who possesses a conservatory knows that in order to keep it well stocked with flowers at all seasons zonal Pelargoniums are almost indispensable. That there are now kinds which flower best in winter, and which possess a variety of colour unequalled as regards effect by those of any other class of plants at this season of the year, was fully proved by those shown by Mr. Cannell, and also by a large houseful of plants at the present time in a blaze of bloom in the nurseries at Swanley.

Tree Carnations.—There is just now a fine display of these in a cool house in the Pine-apple Nursery, the produce of plants struck from cuttings placed in heat ten months ago. They are in 6 in. pots, and have been out in cold frames all the summer. As their bloom-buds begin to swell, they are moved into a cool house to flower. Each plant produces from six to eight fine blooms, which are not only ornamental on the plants, but very valuable in a cut state. Considering how easily such plants can be obtained, and in such a short time, the wonder is that private growers, with only even a small house at command, do not grow these Carnations more largely than they do. Any one, indeed, possessing a small frame might have plants of these Carnations for their windows in winter. A little heat might be obtained in the frame in which to strike the cuttings by means of leaves or manure, and the plants might then remain in it until they showed bloom. Among the best kinds now in flower at Messrs. Henderson's may be mentioned: Princess of Wales, pure white; Irma, bright rosy-carmine, large and fine; Florentine, brilliant-scarlet; Augustine, white, edged and striped with pink; Miss Joliffe, flesh-coloured; Lydia, yellow, edged and striped with carmine; Lily, white, edged and blotched with rich bluish-purple.

ANSWERS TO CORRESPONDENTS.

Black Fly on Cherry Trees.—If your correspondent (p. 501) will syringe his Morello Cherry trees with a moderately strong dose of Tobacco water the black fly will be found to quickly disappear.—W. C.

—— Of all insect pests that affect fruit trees black fly is the most difficult to kill without injuring the young tender shoots it infests, and the only way I could ever accomplish its destruction with safety, as regards the trees, was by means of a decoction of Tobacco and Quassia chips with a little soda and soft soap in it, the soda being necessary on account of its oily coating, which repels water as effectually as the feathers of a duck's back. The most economical way of applying the liquid is to carry it in a light tin bowl or other broad open vessel of that kind and dip the tips of the branches in, which any expert, handy man can do at a quick rate. We always make a practice of going over ours in this way before nailing in, and if your correspondent "B. S." does likewise he will have no further difficulty in keeping his Cherry trees clean.—S. D.

—— Tobacco water is still the best and safest insecticide for black fly on trees out-of-doors. In houses and pits it is, of course, got rid of by fumigating with Tobacco paper. Paraffin when applied at a strength sufficient to kill aphides, scale, or mealy bug, will destroy the foliage of any plant with which I am acquainted; in fact, soft-wooded plants never recover from its effects. I have even known it to prove fatal to Vines when applied as a test for destroying mealy bug.—T. Cowburn.

—— "B. S." will find that the following mixture will kill black fly, viz., 2 lb. of Quassia chips, 1½ lb. soft soap, and 1 lb. of sulphur; put these into a pail, and then pour over them 6 quarts of boiling water; stir the whole with a stick, and then cover it over with a sack; let it stand for a week, when it should be strained through a piece of thin shading. This done, bottle it off and cork it down, and the longer it remains before being used the better. Of this, "B. S." should put 1½ pints into 3 gallons of clean water, and apply it to his infested Cherry trees with a syringe. I always like to apply it in the evening, and next morning give a thorough syringing with clean water. I have always found this mixture, when persevered with, to have the desired effect.—J. J., *Co. Cork.*

—— If "B. S." will fumigate his trees that are affected with black fly two nights in succession with Griffith & Avis's Tobacco paper I will guarantee him safe immunity from this most troublesome pest. A better way still is to fumigate in the evening and again early in the morning, at least two hours before the sun has any power. Of course the house in which they are fumigated must be thoroughly filled with the fumes of the Tobacco or the cure will not be effectual.—D. Thomas, *Drayton Manor.*

Paraffin Oil as an Insecticide.—Mr. Harris (p. 501) offers a valuable word of caution respecting the use of paraffin for destroying scale and mealy bug. Having on the back wall of a stove a good-sized Stephanotis, which has hitherto baffled all attempts to clear it of the above-mentioned pests, I resolved to try paraffin. The plant was accordingly well syringed with a mixture of one wineglassful of paraffin to four gallons of cold water, one man keeping it constantly agitated, while a second applied it. Both scale and bug were killed, and the plant was somewhat damaged. Nearly one third of the leaves have since fallen off. I also tried paraffin on the old Eranthemum pulchellum with the same result. Epacrises do not seem to be injured by its use, but I find that one dose is not sufficient to thoroughly cleanse them from white scale.—W. M. Stickland, *Hopwood Hall.*

Will Rabbits Eat Jerusalem Artichokes?—My experience is that rabbits, and more especially hares, will not only eat the tops of Jerusalem Artichokes, but will scratch down and devour the tubers. During several years' experience in game-preserving districts I do not remember a single season in which this Artichoke escaped. Our remedy was to dust the tops with soot and lime, and in the autumn, as soon as the roots were fit for lifting, or before hard weather set in, to lift and store the tubers in cool cellars. Your correspondent (p. 477) will do well to follow Mr. Hobday's advice, and securely fence in the ground with galvanised wire netting, as it is surprising how hares and rabbits attack newly-planted subjects almost indiscriminately. Mr. Fish says this Artichoke "is a dainty dish," but I can nevertheless assure him that not one per cent. of the population of rural districts would accept it as a gift. For this reason its cultivation has been neglected, and it is usually consigned to some out-of the-way corner, or used as a screen to hide dwarfer vegetables from view. Jerusalem Artichokes would, however, repay a little careful attention, as they yield abundant returns.—J. Groom, *Linton Park.*

Clearing a Herbaceous Garden of Weeds (page 477).—The best way of dealing with weeds in a neglected herbaceous garden is to dig up the bulbs and plants carefully, and trench the whole of the ground, as, from the neglected state it is in, it must be greatly impoverished. In doing this, however, there is one thing to be avoided, and that is, bringing the subsoil to the top, the inert condition of which is always such that it takes years of aërating and exposure, with mending and top-dressing, before the roots of plants will take to it kindly. Were it not for this, it would be advisable to get rid of the weedy portion by burying it below; but if the surface be turned under and kept at a depth of from 6 in. to 9 in., there are very few weeds, except Dock, Dandelion, and such as may be picked out, that will ever find their way through again. The trenching will afford an opportunity of working in a good dressing of leaf-soil or manure, or both, according to the character of the land to be treated; but whichever is used should be thoroughly decomposed and well incorporated during the process of digging. Herbaceous plants are such gross feeders that the greater part of them are much benefited by an overhauling of this kind occasionally, and the present is a good time to carry it out, as they may be divided or reduced in size with the greatest safety. In arranging them again it is highly important that the planter should know the different varieties, the height and size they attain, &c., to enable him to place them for effect, and afford the necessary room for their growth and future development. There are so many things that associate with herbaceous plants, and that are so well adapted for filling up vacant spaces among them, that it is always best to place the permanent plants at wide intervals, and fill up between with Gladioli and such like, which will give an additional charm to the border. The planting complete, the next thing is to afford a good mulching of leaf-soil, which will not only act as a capital non-conductor in preventing frost reaching the mutilated roots and cut parts where the divisions have been made, but will also help materially in smothering weeds that will come from seeds with which the ground is stocked. Not only is the fine leaf-soil of value now and in spring for the above-named purposes, but it is of great use likewise during the summer, owing to the shade it affords and the way it intercepts the escape of moisture by evaporation when the air is hot and dry.—S. D.

Lamium striatum.—In reply to Mr. Williams (p. 502), I may state that this is an old plant. I have known it for fifteen years under this name, but it is probably inaccurate, as I find no mention of it in Loudon, though it occurs in Steudel's "Nomenclator Botanicus." I have always thought it might be a variety of L. purpureum, as the flowers and stem are red, and it blooms in the winter. The name striatum is tolerably appropriate as applied to the variegation, as it forms a band down the centre of the leaf.—J. Cornhill.

Quickly-grown Pine-apples.—"M." (p. 499) has done well to have produced two Pines weighing in the aggregate 13 lbs. 13 oz. from suckers without heat in less than four months; supposing the suckers to have been well rooted it would take more than half that time to develop such fruit, without taking into consideration the check that would be caused from separation. This reducing of the cost of fuel and the length of time usually taken to fruit Pines, will open up a new era in their culture.—M. M. P.

—— Will "M." (p. 499) kindly say how long the fruit from the old stools, from which the suckers in question were taken, had been cut previous to the suckers being taken off, and what the weights of the first fruits were.—H. A. B.

Names of Fruits.—*F. B. L.*—Norfolk Beefing, often written Beaufin; a valuable late-keeping culinary Apple.

Questions.

Odontoglossum crispum.—We have a plant of this Odontoglossum producing two flower spikes from the apex instead of the base of the pseudo bulb. The flowers are large and well developed. Is this common?—J. C.

The Fever Gum Tree.—In the garden at Singleton, Swansea, there are numerous plants of Eucalyptus globulus which have stood in the open ground all the year round for several seasons. They were planted small, and have grown freely. I have a number of them, too, but as yet they are small and not worth naming. Will any of your correspondents be good enough to inform me how this or any other Eucalyptus would succeed planted in sand near the sea?—Cambrian.

Lasting Ferns for Bouquets.—What Ferns last the best for bouquets, &c.? The British Ferns mostly fade in a few hours, and Adiantums and Ferns of that class are soon gone. I only know three of any lasting power, viz., Davallia elegans, D. canariensis, and D. dissecta; these will remain fresh a fortnight if put in water. Nephrodium molle and Pteris tremula last about three days, but most of the others, as far as my experience goes, will only do for a few hours.—W. A. S.

Currants Losing their Bloom-buds.—When I went to prune some Red Currant bushes the other day, I found some of them partially stripped of their bloom buds. Can any reader of The Garden tell me what bird it is that does the mischief, and also how to remedy it? In the country I always found that it was done by bullfinches, but it cannot be them now, as we are situated right in the heart of the town, and bullfinches are such shy birds they would hardly venture where so much traffic is going on.—F. W. H., *Park Street, Yeovil.*

Salt-water-resisting Plants.—Would any readers of The Garden kindly assist me by naming some shrubs and trees that would grow in an exposed place, which is at times flooded by a tidal river? The salt has hitherto destroyed anything I have planted, and ordinary Grass seeds will not grow. The soil is good and deep, but there is a soakage from the river. It is greatly exposed to north and east winds. What mixture of Grass seeds would it be advisable to use?—A. T.

Poultry Manure.—What plants or vegetables are best suited for the application of poultry manure? and how should it be employed?—Subscriber.

Field Mice in Rockwork.—I have a plague of small field mice who are working great destruction in a rockwork. How can I trap them? They refuse the ordinary baits.—H. N. Ellacombe, *Bitton.*

Paris Exhibition.—We learn that Mr. Lascelles, the well-known hothouse builder, 121, Bunhill Row, London, has just received the Cross of Chevalier of the Legion of Honour for his exhibits shown in classes 17, 66, and 85 at the late Exhibition. We also learn that Mr. Stephens, 171, Aldersgate Street, has carried off the highest award for his wood stains at the same exhibition.

No. 369.] SATURDAY, DECEMBER 14, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

NEW ROSES.

THE French are a highly imaginative people. We find this quality, with which they are so abundantly gifted, cropping up every way. It shines in their romances (who but a Frenchman could have written "Le Juif Errant?"), and it is illustrated in the exquisite designs with which their porcelain, tapestry, and books teem. It is sometimes most enjoyable; it keeps up a pleasant system of surprise and wonder at where they could have stumbled on the conceptions which seem to them so natural. *We* are just the very reverse; our big city tells of practical work, theirs of beauty and gaiety. But there is one place in which I do not like the imagination to be so demonstrative, viz., in their list of new Roses. To read them, year after year, one would think that by this time there was no room left for another good Rose; that all the adjectives with which glowing descriptions could be drawn were exhausted. But, lo! another year comes round, and there is the same marvellous list. The names of the Roses are changed, but the descriptions still remain; and yet, what is the result? In a list compiled from the expressed opinions of forty-one Rose growers (twenty-five amateurs and sixteen nurserymen) of the best seventy-two Roses, we find that of the 1872 Roses, only two appear in it; of 1873, the same number; of 1875 there are six, the largest number for many years. Bearing in mind that every year there are some sixty at least new Roses advertised by the French growers, we must surely say that it is "a very small piece of bread for such an intolerable quantity of sack.’

But if so, what are we to say of the last two years? that is, the Roses sent out, or rather their names, for 1876-77 and 1877-78. In each of these years there have been announced upwards of fifty varieties, and although some of our best Rosarians spoke hopefully of them, there is not one that has as yet made any mark. Of the former year I cannot recall to mind a single one of which any one has said that it would be really a desirable acquisition, nor any that has created a sensation amongst exhibitors, and yet if they were good they should by this time have done so, of those sent out the year before, such kinds as Duchess of Vallombrosa very soon asserted their position. We heard, indeed, Madame Emma All and Madame Sophie Fropot well spoken of; we have seen a bloom of them occasionally, but have not been struck by their appearance. It may be too early to judge of those of last autumn, for new Roses are so hard worked that well nigh any constitution they have is injured temporarily by the manner in which they are forced and hacked about; but, generally speaking, if there is anything really valuable, it makes a mark the first season. One, indeed—Boildieu—has been shown and certificated, and gave promise of having a fine flower, but that is the only one. I looked in vain through the boxes of new flowers, at the National Society's show at the Crystal Palace and Manchester, to see any of foreign origin that might be desirable to add to one's collection, but I failed to see any. Those to whom we are accustomed to look for information on those subjects speak favourably of Alfred K. Williams, a large Rose in the style of Horace Vernet; Edouard Dufour, in the style of Devienne-Lamy; Madame Anna de Besabrasoff (is she a Russian Mrs. Langtry? as two Roses are named after her), a light bright crimson, in the way of Annie Wood; Princess Charlotte de Tremouille, in the way of La France; Marie Verdier, like Auguste Mie, with fine petals; Madame Gabriel Linzet, clear light satin-rose, said to be distinct and good; Madame Laboulaye, light silvery-pink, in the way of Bennett's Duchess of Edinburgh; Edouard Pynaert, in the way of Antoine Ducher, deep purplish-crimson; and Grand Duke Nicolas, blood-red, shaded with vermilion, large, full, and imbricated. Time only will show whether these opinions are likely to be realised. Similar opinions were expressed last year as to new Roses, but we were doomed to disappointment, and it may be so now.

It is refreshing to turn from these barren lists of the French raisers to those of our own country, not so reduntant in quantity, or with descriptions so charged with the overflowings of an exuberant imagination, and giving promises which are never likely to be fulfilled. English Roses have to pass through an ordeal to which the French varieties are not subject; they are submitted to the consideration either of the Floral Committee of the Royal Horticultural Society, or of the judges at our great exhibitions; they are seen by most of the Rose growers in the kingdom, and, consequently, when they are put into catalogues it is easy to see whether those descriptions are justified by the recollection of the Rose growers; they are, as I have said, not so numerous. In the autumn of 1877 there were announced three new Roses by Messrs. Paul & Son, three by Mr. Charles Turner, and three by Messrs. William Paul & Son. Taking these *seriatim*, we shall find, I think, that English raisers have much cause to congratulate themselves. Mrs. Laxton, raised by that very successful hybridizer, Mr. Laxton, late of Stamford, and sent out by the Cheshunt firm, is, I believe, one of the very best Roses ever raised, and has been largely shown this season, and in every case with success; its shape is grand, an Alfred Colomb-like centre, with a grand circumference of reflexed petals; it reminds one of Alfred Colomb, Marie Baumann, and Senateur Vaisse. What more can be said? John Bright, raised at Cheshunt, is a bright glowing crimson, excessively brilliant in colour, and of a fine open-cupped shape. Robert Marnock is not equal in quality to the two preceding Roses, but is a fine garden Rose. Messrs. William Paul & Son's Rosy Morn has flowers of a delicate peach, but is not equal in quality to May Quennell, raised by Mr. Postans, but sent out from Waltham Cross; it is a fine magenta-carmine Rose shaded with crimson, very large and full, and has been seen to much advantage during the past season. Their Red Dragon is a climbing Rose of great merit. Mr. Turner sent out Penelope Mayo, raised by Mr. Davis, a fine large flower in the style of Duchesse de Caylus, with a strong, robust constitution, flowering freely in the autumn, Dean of Windsor is in the style of Oxonian, but of the colour of Comtesse d'Oxford, while Richard Laxton is a Maréchal Vaillant style of flower raised by Mr. Laxton, crimson, and a free autumnal bloomer. Thus three out of the nine are decidedly first-rate Roses, and it is just possible that some of the others may approach them next season. When we remember that we had from two of these firms in the preceding year Magna Charta and Marchioness of Exeter, we may also anticipate that in the Roses announced by them for next season we may find some real gems. Countess of Roseberry, Duchess of Bedford, Charles Darwin, Marquis of Salisbury, Harrison Weir, and Dr. Sewell have all been before the Rose-loving public, and been well received. There is one very material point in connection with English-raised Roses, and that is, that they are more likely to have a vigorous, cold-bearing constitution than those which come from France, and that in reality they do possess it. Rose lovers see the wood as it is exhibited with the blooms, and oftentimes the plant, for they are often shown as pot plants, and have also the opportunity of seeing them in the homes from whence they come (for it so happens that the three principal growers who have distinguished themselves as raisers of seedlings live contiguous to London, the centre to which all things gravitate) and note the character of the plants which they wish to procure, not that all English-raised Roses have vigorous constitutions, for I know of one which is one of the most beautiful Roses I have ever seen, but which, I fear, will never have vigour enough to enable it to be sent out.

Crowds of new varieties are announced from France, but I think the eyes of Rose lovers will, after the experience of the last two years, be turned to the Rose fields of England to find out additions to be made to their well-filled collections.

DELTA.

The Old Pink China Rose.—Mr. Hobday (p. 496) and others may be interested in knowing that this Rose has four large beds devoted to it here, and has had for the last dozen years. The Pink

China is edged with the dark red or crimson variety. The latter is hardly so free a flowerer nor so hardy as the pink one; but the two together look well, and seldom fail to furnish a good supply of cut Roses from May to December. We are still (Dec. 4) cutting them. The beds are planted rather thinly, and a few pink Pelargoniums or Petunias are mixed with the Roses during the summer months. In very severe winters a few Spruce boughs have been laid over the beds, but in ordinary seasons even this small modicum of protection has not been given. The beds receive a slight dressing of manure every autumn, which is "pointed" rather than dug in. About April 1 all weak, exhausted, or frost-killed wood is cut out. This is all the attention which China Roses need, and they furnish unique shades of colour in a large geometrical flower garden, and are by far the most useful beds which we possess as far as cut flowers are concerned. These Roses in the bud state are really very beautiful and useful for vase or bouquet work. There is also a so-called white variety which we once had and lost; likewise fairy Roses or small representations of both colours. China Roses do remarkably well in warm and sheltered places; but the edges of our large beds were too bleak and cold for the Fairy kinds, with which it was attempted to form an outer band between the crimson China and the turf. By the way, these Fairy Roses are just the plants to match with such small Fuchsias as Pumila microphylla, Venus Victrix, &c., in small beds or borders.—D. T. ISH, *Hardwicke House, Bury St. Edmunds*

SCENTLESS ROSES.

To all who grow Roses for the beautifying of the garden and the adornment of the house, it is pleasant to hear from various sources that a growing feeling of protest is aroused against the many scentless varieties so constantly appearing at exhibitions generally. As in the tournaments of old knights contended for the sake of a smile from their chosen dame, so should we also in these modern days imitate their example, nay more, raise a crusade against those who dishonour the queen of flowers by raising and showing scentless Roses that do but mock our senses by an outward show of all that is beautiful; and thus begin a war of Roses, no longer of York and Lancaster, or of red and white, but of the sweet-scented *versus* the scentless, in which all should enlist to oppose resolutely the taste that condones any defect that is not apparent at the exhibition table—a taste that values size more than scent, indeed usually ignores the latter altogether; uniformity of shape more than that variety which we are elsewhere told is so pleasing, and even encourages rankness of growth rather than freedom of flowering, and has, to make a long story as short as may be, loaded our gardens and the lists of nurserymen with many varieties that are grown merely to be discarded. It would hardly be just to accuse exhibitors as the source of all these evils, but rather confess that the love of novelty, to which all must plead guilty, has also largely contributed, and as all true lovers of the Rose must always desire to see something more beautiful than they yet possess, the most obvious way of effecting a change so desirable, is to establish prizes for Roses in which scent shall rank as an equal qualification to those already demanded, and, in the case of new Roses, excluding them from the highest honours at shows if they lack the crowning grace of sweetness. It cannot be urged that exquisite perfume and freedom of habit are incompatible with size and shape, when such a Rose as La France has been for years before our eyes and noses, and those who raise new Roses should be invited by special prizes to leave no stone unturned to bring us still nearer to perfection, and, by demanding a guarantee that their beautiful novelties are sweet-scented, throw back on their hands all that are faulty in this particular. If this were done, how often should we be spared the annoyance of finding that a Rose we had admired at a show was, when grown at home, devoid of scent and scanty in blossom.

Herbaceous borders, Alpine rockeries, and wild gardens are just now the ruling taste of the day, and in the latter place we can all find beauty in the Pæony when its brilliant petals are bathed in June sunshine; there, then, let us place those beautiful impostors that will, in the end, bring discredit on the Rose, and reserve for our Rosery and loving care only those that really are of highest excellence; and, if we cannot refrain from showing scentless Roses, let them have a class to themselves, and then no one can complain. A list of all the scentless Roses would be instructive, in the sense of how to avoid if some great authority would compile such an "Index expurgatorius" (for who would buy a scentless Rose?); but, in the meanwhile, a few of the head offenders may be mentioned as a guide to the unwary. Perhaps there is no greater offender than the familiar Victor Verdier, scentless itself, and the parent of so many scentless offspring, among which are Comtesse d'Oxford, Mdlle. Eugénie Verdier, Hippolyte Jamain, and many others. Baroness Rothschild, Paul Néron, Duke of Edinburgh and his descendants, are also in the same list, and Etienne Levet and Marquise de Castellane, Mons. Noman and Anna Alexieff must be added to it.

It is curious to remark that, while Tea Roses are generally considered the most powerfully scented, the new Tea Hybrids hitherto are lacking in this quality, though they may just escape the imputation of utter scentlessness; and, still more remarkable, that Gloire de Dijon, one of the sweetest of Roses, has not transmitted that quality to its descendants. For instance, Madame Trifle, Madame Levet, and Tour Bertrand are without scent, and Belle Lyonnaise and Madame Bérard are nearly so, and, as an instance to the contrary, Maréchal Niel itself, one of the most remarkably powerful-scented Roses, is said to have Isabella Gray for its parent, a Rose that is devoid of all smell. While urging the necessity of scent to the Rose, if it is to keep its place as first and foremost among flowers, the desirability of free blooming in autumn must not be overlooked; but this is just now not likely to be forgotten when the tide is setting in in favour of these Tea Hybrids, which promise so much; and, until such a combination has been achieved, till our gardens are full of new varieties surpassing all we now possess in sweetness, size, shape, colour, and freedom of bloom, let us not rest content or turn our attention to other qualifications. E. H. Woodall.

ROSE CUTTINGS AS ROSE STOCKS.

The closeness of affinity is an important factor in the ensuring of a sound union between the scion and the stock, and it follows that not a few Roses might form far more appropriate stocks for Roses than any sorts of Briers. Experience alone confirms this theory. Most Roses do well and live long on such stocks as Charles Lawson, La Reine, Coupe de Hebe, John Hopper, Baronne Prevost, and other free-rooting, vigorous-growing Roses. The old Cabbage and Provence Roses also form capital stocks for most of the Moss Roses. There is a strong similarity in the habit and mode of growth of these two classes of Roses that enables them to match well with each other. The question of Rose stocks may be said to be, as yet, in its infancy. The Brier is to the Rose what the Crab is to the Apple—a gross stock that may suit some, and destroy or deteriorate other Roses. It is high time that Rose Stocks were found having corresponding qualities to Roses as the Paradise stock to Apples. Dwarfing stocks, floriferous stocks, permanent and perpetual stocks, ought to be within reach of the rosarian. It is a question as interesting as important, to determine the cause of many premature deaths among Roses. Does, for example, the Rose kill the stock, or the stock kill the Rose? The answer is less simple than it seems. The deaths referred to, do not result from imperfect union. It is a curious fact that but very few deaths originate from this cause. The kinds take well on almost any stock—stocks of all kinds seem equally ready to welcome and form a close union with buds of every possible variety of Roses. Disease or death approaches through the tops and the bottoms; perhaps 75 per cent. of such deaths come through root failure. Nor is this greatly to be wondered at, to see the way that Briers for budding are too often treated. Torn out of old hedgerows, mostly at so much a score or hundred, tossed about in the air, conveyed often to great distances by rail, cart, or waggon, without the least protection to the roots, and finally dressed with a handbill or axe across a block, and thrust into the soil with often scarcely a root at all. Nothing but disease or death could be reasonably expected. Instead of this, however, so full of vitality are these dormant Briers that they mostly throw out a few strong shoots the following season, and these are budded in due time and take. All might, therefore, be well did the grower exercise common prudence or patience, but trade is so brisk, or the demand for Roses so urgent, that these Roses are at once transplanted into their flowering quarters a few months after budding, and this early removal, great disturbance, and partial destruction of their roots, complete their destruction. But even with seedling Briers and Manetti stocks under better treatment, and every care being taken of their roots, the percentage of deaths among budded Roses is alarmingly high, and ought to be capable of being at once reduced one-half or two-thirds. That this high death rate among Roses arises from a bad matching of scions and stocks, seems obvious from the fact that it does not occur among Briers nor yet among Roses on their own roots. Both of these when apart are endowed with great powers of longevity. No sooner are they united than their health is enfeebled, their lives shortened. The selection of stocks with closer natural affinities and on nearer lines of consanguinity, would probably restore the health and prolong the life of many of our Roses. After all the stocks that have already been noted, for most or all of the Tea Roses, there are few better than the old pink China monthly Rose and Gloire de Dijon. The first has a thin bark, and needs careful manipulation, but, with that drawback, it forms an admirable stock, roots like a Gooseberry cutting, and grows like a weed. The present is a good time to select Rose cuttings for stocks. They may be put in of any desired length from 6 in. to 4 ft. in length. Pieces from 2 ft. to 4 ft. are the most suitable for forming stocks for standards. Taken off either with or without a heel, and about 6 in. inserted in the soil, most Roses root readily. There are few better modes than that of digging in the cuttings. If the ground be poor give it a good coating of good manure, for Roses like a rich soil even to root anew, and the vigour of the Roses will largely depend on the amount of good food the roots find to feed upon afterwards. Begin digging the ground at one end, and when a sufficient space—say 18 in. for dwarf Rose cuttings, and 3 ft. for taller ones—is turned over, run a line along the dug side of the ground and cut it down straight and even to a depth of 6 in. Should the bottom be very loose, tread it down firmly; then insert the cuttings at distances of 6 in. apart, and cover along the bottom with a little sandy compost, should such be available, if not, the soil will answer almost equally well. Place a small spadeful of fine soil against the cuttings, and tread it down firmly around them. Proceed with the digging, making up the soil to the level of the ground around the cuttings, and leaving the surface loose and smooth. Dig on to the distance for the next row, and proceed exactly as before, and so on, and so on till the cuttings are exhausted, or the ground is filled. Nothing more will be needed till next June but keeping the ground free from weeds and rubbing off all the buds as they appear but two, or at most three, of those best placed for budding. Let these be budded as soon as the wood is sufficiently developed for the purpose. This will probably happen at various times from June to September, while some of the Rose stocks may not be fit to bud the first year. Each, however, as soon as rooted, becomes a Rose bush or tree without budding, and may either be kept as such, or cut back, after a season's growth, to form a yet better, stronger stock the second season from a cutting.

D. T. Fish.

The Sickle-leaved Catchfly (Silene falcata).—This pretty Catchfly forms perennial tufts consisting of numerous curved, awl-shaped, hairy leaves. The flowers are borne singly on stems about 6 in. high, and are about $\frac{3}{4}$ in. across; the petals are divided into halves down to the throat, as are also the central appendages, the colour of the whole being a creamy white. It is a native of the Bithynian Mount Olympus.—W.

Japanese Primroses out of Doors in the Eastern Counties.—I see it stated in The Garden (p. 500), that these Primroses thrive well in the open air in the garden of the Rev. Mr. Nelson, at Aldborough, in Norfolk. Possibly it is warm and sheltered, and we don't think Hardwicke so very cold. Charmed with the beauty of Primula Japonica, I propagated it largely by means of seeds and otherwise, and was rewarded with about 1,000 plants, most of which were planted out in herbaceous borders, and warm prepared nooks and corners in our large shrubberies. The result has been cruelly disappointing, not half-a-dozen of them are alive.—D. T. Fish, *Hardwicke House, Bury St. Edmund's.*

THE KITCHEN GARDEN.

FORCING FRENCH BEANS.

There is no other forced vegetable that requires so little labour and expense in its production as French Beans. Unlike Seakale or Asparagus there is no previous preparation required; one has only to plant the Beans in the right soil and temperature, and, under ordinary circumstances, we may look forward with certainty to gathering a crop, more or less prolific, according to the way in which the wants of the plants have been attended to. A steady, regular night temperature of about 60° there must be, and from the time the young plants break through the soil till they cease bearing from exhaustion, they must occupy a light position, and the nearer the glass the better. In the old days, before the advent of hot water, when fruit-forcing was mostly done with smoke flues, many a good crop of Beans I have seen growing in 8-in. pots on the top of the flues in the early Vineries. The red spider was kept down by placing dishes of water among the pots of Beans on the flues, and these maintained a genial atmosphere in the house, which was beneficial to the Vines as well as to the Beans. But when the longer and brighter days of March and April come, French Beans are rather a dangerous crop to have in Vineries, and it requires the greatest care to keep them free from spider, and when the first symptoms of a discoloured leaf appears, which the practised eye soon detects, out must go the whole crop. Old plants that have been some time in bearing, are more liable to spider attacks than others in robust health. This is according to a well-known natural law; insects rarely attack their prey till it has become weakened from some previous cause. If one had any choice in the matter, the best structure for French Bean forcing is a low span, or half-span-roofed house or pit, sunk 12 in. or 18 in. in the ground, having a path down the centre and beds of fermenting materials on each side. The beds of fermenting materials are not indispensable, but the soft, genial atmosphere which prevades the house in which they form a part of the arrangement imparts a vigour to the plants that is the sure precursor of a good crop. There are various ways of planting Beans. One (and I think the best way) is to plant four Beans in each 4-in. pot, and when the pots are full of roots shift on to 7-in. or 8 in. pots, dropping the balls down so that the stems are earthed up in the potting nearly to the leaves.

The soil used should be turfy loam and old manure, about two of the former to one of the latter, and should be of the same temperature as the house. This can easily be managed by placing the soil inside the house a few hours before using it. Most men have a favourite kind of Bean for forcing. Osborn's forcing is a good kind, and the fact is any kind that is early and productive in the open air will be proportionately early under glass. Some growers simply plant five Beans in the fruiting pot at once, and fill the pot about half full of soil, reserving the remaining space to be filled up after the plants have made some progress. I have seen Beans also grown in boxes, and I mention that here because there may occasionally be situations on shelves near the glass where boxes might be suitable for the last crop, as plants in boxes are less liable to suffer from heat or drought. As the plants advance in growth, a few light Hazel or Birch sprays may be placed around the edges of the pots as a support to the plants. With strong, vigorous plants that have had plenty of light this may not in all cases be necessary, but it is not much trouble, and it prevents the plants falling over. Every pod should be gathered when large enough for use. If left longer not only do they become tough and useless, but they prevent a successional crop coming on the same plants.

Beans will keep fresh for a week or so after being gathered if tied up in bundles and the stalks just inserted in water and placed in a cool room. Liquid manure may be given often to plants in bearing, as by that time the pots will be full of roots, and will be in a position to absorb and utilise strong food. Drainage is not a very important matter in French Bean forcing. One large crock over the hole in the bottom of the pot and some rough loam and manure over it will suffice. They must at all times have plenty of space.

E. Hobday.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Capsicum Princess of Wales.—This has been well grown by Mr. Wildsmith, of Heckfield. A large collection of it was staged at Messrs. Suttons' root show at Reading on Saturday last and attracted considerable attention. The plants were all of standard growth, their stems being about 12 in. in height, and their heads about 15 in. across, the rich yellow fruit hanging down so as to present a most effective appearance. Either for tables, sideboards, or for any ordinary decorative purpose, this Capsicum is singularly pleasing, and contrasts strikingly with the various scarlet-berried Solanums. Seed sown in March in a gentle heat will, under ordinary cultivation, produce plants loaded with golden pods in the autumn. A little heat assists the ripening and colouring, just as it is productive of similar results in the Solanum.—A. D.

Celery Free from Worms.—The fine examples of Celery lately exhibited by Mr. Pragnell, of Sherborne Castle, at South Kensington and the Agricultural Hall, serve to show what good results may be obtained when proper provision has been made for its culture and for the prevention of worms. This Celery was grown in trenches, into which had been well worked a quantity of manure prepared by having a quantity of salt and soot mixed with it some time previous to its being used. The manure is laid in a round heap and frequently turned in order to get the salt and soot thoroughly incorporated with it. It must be remembered that soil in which worms abound most is that to which unprepared raw manure has been added from time to time, and, therefore, freeing the manure from worms previous to its being used is one way of effectually keeping them from the soil. In addition to this the salt and soot promote growth to a marvellous extent. The examples alluded to were of great weight, remarkably solid, brittle, and fine flavoured, and not a leaf-stalk was worm eaten.—S.

The Highfield Grape Tomato.—This singular hybrid, the produce of a cross between the Currant Tomato and Hathaway's Excelsior, is apparently a most valuable kind as it withstands the disease long after others have been killed off by it. I saw this new kind growing quite fresh and green on the garden walls at Highfield a few days ago, having but the shelter of a mat over each plant at night. The bunches of fruit range from 9 in. to 18 in. in length, the fruit being as large as the berries of the Gros Colman Grape and finely flavoured. It is a capital kind to stew whole and use for dressing a roast joint, with which it should be eaten. The entire stock has now passed into the hands of the Messrs. Suttons, of Reading, and, therefore, next season the variety will be doubtless widely grown.—A. D.

Late-sown Scarlet Runners.—I quite agree with what Mr. Groom says (p. 453) in reference to this subject and I cannot understand why Mr. Legge should condemn the practice of late sowing in this county. It is from the late-sowings that I generally obtain the finest Beans. I made a sowing on June 12, and gathered from the produce of it on August 28, exhibited the Beans, and won first prizes with them. I never sow before May 12. I have seen too many bad results from sowing earlier. I always have plenty of the dwarf kinds from which to gather until the Runners come in.—J. J. C., *West Hall, Sherborne, Dorset.*

Asparagus and Salt.—I have for some time past paid very considerable attention to the cultivation of Asparagus. If any one thing is clear to me it is that no salt or brine is in any way necessary to it. The best beds I know of never get any salt at all. I write this in reference to Mr. Legge's note in The Garden of November 23. Mr. Legge adds: "The only questions not settled—Should a bed be made raised or flat? Should there be good drainage or none? of course, supposing the ground fairly dry. Should, as at Bath years ago, large patches be cultivated? or should only single lines be planted at a distance of 18 in. between each plant?" He may rest assured that his single lines at 18 in. between each plant are far too close.—T. H.

Potatoes at the Paris Exhibition.—At the great Parisian Potato show, held at the Trocadero in October last, a remarkably fine collection of Potatoes, most of them French varieties, was exhibited by Hyacinthe Rigault, of Groslay (Seine-et-Oise), for which the judges awarded a silver medal. The following were the most noteworthy varieties, viz., Tetart Hâtive, Reine de Mai, Feuille d'Ortie, Plate de Brest, Boulangère, Rosace de Villers, Marjolin Hâtive, Zavier, Farineuse Rouge, Coquette, Pousse Debout, Cailland, Hardy, Crapaudine, Saucisse, Violette Rouge, Bourbon Lancy, Morceaux, Cornichon, and Rognon Rose. English Potato growers, instead of adding so many worthless American varieties to their collections, had better try some of the above-named French kinds, which are far better for table purposes than the Americans. For a table Potato there is not an American, nor very few English, that would equal the first-named French variety—Tetart Hâtive. I quite agree with what "A. D." says (p. 453), that there is not that piquancy of flavour in those white, mealy Potatoes that is found in the yellow-fleshed kinds. If a new Potato is brought out that boils mealy and white it is spoken of as a first-class variety, when, in reality, most of those white, mealy Potatoes have no more flavour than starch. Twenty years ago there was a Potato very much grown in the eastern counties known as the Old Cambridge Kidney; it boiled yellow, was moderately mealy, and had a sweet, nutty flavour. For the table there was nothing to equal it. I have been frequently asked by different people where they could get that Old Cambridge Kidney that was so much grown about twenty years ago? There are varieties exhibited now and then at the different Potato shows as the Cambridge Kidney, but not at all like the one about which I have spoken when boiled. It appears to be quite gone out of cultivation, a circumstance to be regretted, as there is not another variety in cultivation at the present time equal to it.—R. S.

Late Peas.—We find Ne Plus Ultra a very good late Pea (Netro Sultans I once knew a jobbing gardener term them). We had our last dish of Peas this year on November 21, and very good they were. We should have had them later had the birds been kept off. Late Peas have not, on the whole, done nearly so well this autumn as they did last year, when we had good ones and plenty of them on December 2.—M. P. S.

Telegraph Cucumber.—I find this Cucumber to be most prolific. From a single plant, in a one-light frame, I cut, between June 1 and Oct. 31, sixty-seven Cucumbers of average size, and this without special preparation of any sort. The bed was made up in April, slowly because of frost. It consisted of one load of manure (not over good) and a small quantity of rotten leaves. The manure was a fortnight in preparation, and it took a month after that before the bed got into condition. On removing the plant at the end of October, it was far from exhausted, and a quantity of Gherkins, which were used for pickling, was plucked from it.—J. W., *Talbot Road, Tottenham.*

Autumn-sown Peas.—I have noticed the recommendation not to sow Peas before the new year. I have them now more than 1 in. high, thoroughly vigorous, and fear not they will be fit to pick the third week in May. As to the kind for early sowing there can be no doubt that East's Kentish Invicta beats all, even Dickson's first and best. All must agree that in flavour a blue wrinkled Pea is superior to any other, also the Invicta possesses the qualities of being a good bearer and very hardy, never reaching the height of Sangster's No. 1.—Eugene E. P. Legge, *Litton Cheney, Dorset,*

Winter Radishes in Germany.—In England Radishes are not nearly so much eaten as they should be. They would be more largely consumed if it were generally known how they should be prepared. In Switzerland and Germany Radishes are largely eaten both in summer and winter, prepared as follows: Wash them clean and wipe them dry and then with a sharp knife begin at the root end and cut in nearly to the centre of the Radish. Continue to work the knife round, cutting as thinly as possible until the base of the root is reached; then take the Radish by the small end, and, holding it base downwards, each segment will open, giving it the appearance of a large corkscrew. Then dredge the interstices with salt and allow them to remain a quarter of an hour, when by gently pressing the whole close in together a portion of the sap will flow out, thus extracting the hot flavour which to many is a cause of dislike. The flesh, so to speak, is thus rendered crisp and delicate. The culture of this root forms an important industry in many parts of Germany: Regensburg, in Bavaria, enjoying a special renown for Radishes. There they are grown to a large size, and when seen in the markets in great stacks have a somewhat similar appearance to Turnips as seen in Covent Garden. Rich ground and plenty of water are necessary for their summer culture; if not grown quickly they fail to attain that crispness which renders them so palatable.—John Cornhill, *Byfleet.*

Green Kohl Rabi.—This more than answers my expectations. We have always had some amount of trouble with Turnips. They come in a glut, and do not last long, and often when wanted for soups there are none to be found. We cannot, in fact, guarantee Turnips fit for use any and every day throughout the year; but this can be done with Kohl Rabi, for a lot of roots stored last winter lasted until we had fresh small roots from seed sown early in the spring, and thus there was no broken link. As for the root, it gives a better flavour than the Turnip, and also makes a very good vegetable; but to serve as Turnips it certainly will not do, and I am glad to see that we have a good crop of white Turnips for autumn use, for there are times when we prize them.—"Gardeners' Magazine."

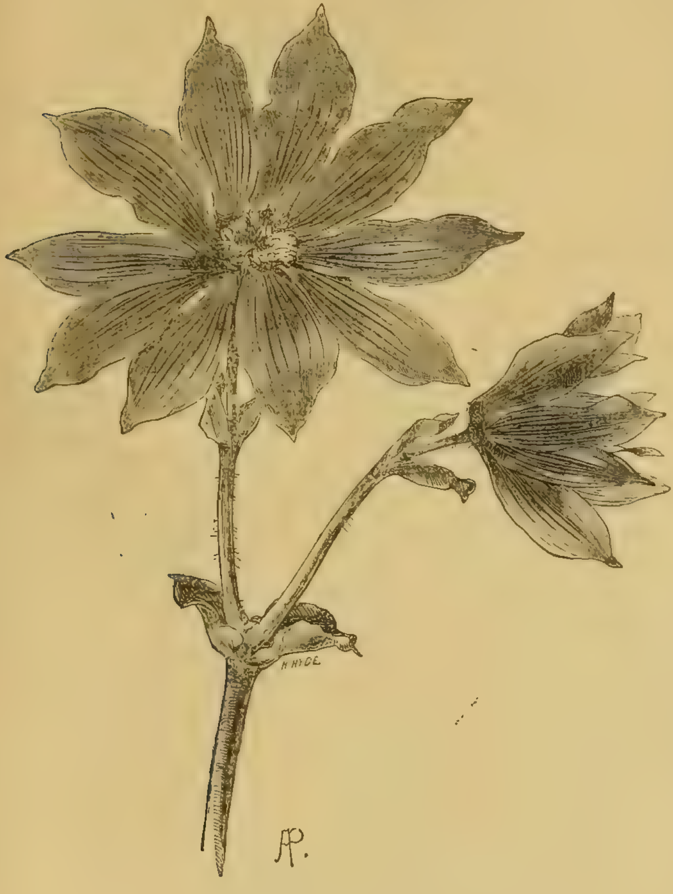
NEW OR RARE PLANTS.

BEGONIA POLYPETALA.

Begonia polypetala (Alph. D. C.); tuberosa; scapo petiolisque albido-tomentosis; limbis ovato-acutis, croso-dentatis, cordatis, supra pubescentibus, subtus dense tomentosis; floris masc. sepalis 2, petalis 9-10.

A very distinct species of the section Huszia (Prodr. XV., pars 2, p. 283), next to B. pleiopetula for the characters, with splendid red flowers as in B. cinnabarina and B. Veitchi. Root tuberous. Scape 40-42 cent. high, covered with a soft whitish tomentum. Petioles 18-20 cent. long, with soft and white hairs as the scape. Limbs ovato-pointed, cordiform, irregularly toothed, 25 cent. long and 20 broad, 7-ribbed, with nerves bifid, hairy above, white and woolly underneath. Flowers emerging out of two opposite elliptic concave bracts 18-20 mill. long. Pedicels of the male flowers 20-22 millim. long, hoary and reddish. Sepals two, ovato-elliptic, 18 mill. long, smooth and reddish inside, tomentose and rather white outside. Petals 9-10, of a fine red colour, smooth, except outside on the middle; the external ones ovato-oblong, pointed, 2½-3 cent. long, 1½ broad; the internal somewhat shorter and narrower. Anthers shorter than the filaments, with a short point at the top. Bract of the female flower elliptic, 15 mill. long, reddish, somewhat white and hoary outside. Ovary tomentose, 3-winged, with one wing larger, ascendent. Lobes 9, of an intense red colour, smooth inside, tomentose outside, the external ones ovato-acute, 2 cent. long, 6 mill. broad, the internal narrower. Style 3, ramose, with tortuous branches. Placentas 3, bipartite, bearing ovules on the whole surface.

Alph. de Candolle.



Begonia polypetala.

We have received from M. Otto Frœbel, of Zurich, flowers of the annexed brilliant and very distinct Begonia, introduced by Messrs. Frœbel, and of which the above description has been written by M. de Candolle, of Geneva. The plant comes from the Andes of northern Peru. It is a species which in Europe grows and flowers in the winter, and will, therefore, be more welcome and more useful than one of the many kinds which are so much employed in summer. The bulbs begin to grow in the month of August, and the first flowers open in October. They open in succession until the month of January, and are during that time the most beautiful ornaments of the temperate house. One flower which was sent to us much resembled, even after its long journey from Switzerland, a blossom of the brilliant Anemone fulgens. Already as many as twelve such flowers had been seen on one plant at the same time in M. Frœbel's nursery. As yet the plant has not been sufficiently multiplied to allow its being offered in commerce. We purpose in due time issuing a coloured illustration of it, which will give a fair idea of a plant which is one of the best and most interesting of recent novelties.

Deherainia Smaragdina.—A most singular plant, with relatively large green flowers. It was described and first figured by Prof. Decaisne in the "Annales des Sciences Naturelles," 1876 (p. 138 plate 12) and recently a coloured plate of it has appeared in the "Botanical Magazine," 6373. This shrub (which appears to be rather a shy bloomer) though it flowered as long ago as 1870 in the Municipal Garden of Paris, Dr. Lindley imported from the tropical regions of Mexico, and it is in gardens under the names of Posoqueria macrantha, Theophrasta smaragdina, and Jacquinia smaragdina. Prof. Decaisne recognised in it the type of a new genus of the Theophrasteæ. It is certainly more curious than beautiful, though it would interest any lover of plants who can appreciate something besides brilliant colours in the vegetable kingdom. In habit it resembles some of the Azaleas, having slender, hairy branches, with the leaves crowded towards the ends. The leaves are leathery, glossy on the upper surface, minutely toothed, especially in the upper half, and about 3 in. or 4 in. long. The position of the flowers is very anomalous, being almost concealed beneath the clusters of foliage. Individually, they are about 1½ in. in diameter, and not unlike a green Primrose, save that the tube of the corolla is very short and the throat wide. With the exception of the yellow anthers, the flowers are quite green, a colour intensely dark in the throat. One stalked flower proceeds from the axil of each leaf, hanging down beneath it. It flowered in the Palm house at Kew in May of the present year.

Pavonia Makoyana, a beautiful Malvaceous flowering shrub, of which an illustration is given in the "Belgique Horticole," 1878, plate 3. It is allied to the equally pretty and interesting P. Wioti, figured in the same publication, 1875, plate 7, and since in the "Floral Magazine," plate 276. Professor Morren states that he has no doubt that his P. Makoyana is new to horticulturists, but he is not so certain that it is to botanists. After some research we think there is little doubt on the latter point also, so far as this plant is concerned, but P. Wioti turns out to be the same as P. multiflora of St. Hilaire's "Flora Brasiliæ Meridionalis" (p. 239, plate 47.) In habit and foliage, the two species named are very much alike, but P. Makoyana has five broad heart-shaped bracts forming the outer calyx, instead of numerous linear ones as in P. multiflora. The flowers are much nearer those of Goethea strictiflora, "Botanical Magazine," plate 4677, but instead of being scattered all along the branches, they are clustered at the ends, and are borne on slender stalks about 1 in. long. In colour they are of a rich rosy red, that is to say the bracts of the outer calyx, the true sepals and petals being relatively small and dull coloured. The column of stamens and styles projects about 1 in. beyond the petals, and the anthers are of a bright blue, contrasting well with the rosy-red of the floral envelopes. In cultivation, Pavonia Makoyana forms a shrub 3 ft. to 5 ft. high, with straight branches, leafy chiefly at the tips, and the leaves are narrow and toothed on the margin, and about 6 in. long; a native of Brazil, introduced into cultivation by Messrs. Jacob & Makoy. The only other plant figured in the last part to hand of the "Belgique Horticole" is Bilbergia Saundersi, a pretty species with red, yellow, and blue flowers and white mottled leaves margined with red; imported into this country from Brazil by Mr. W. W. Saunders about 1869, and first cultivated under the name of B. chlorosticta.

W. B. Hemsley.

TREES, SHRUBS, & WOODLANDS.

ORNAMENTAL FORESTRY.

The beauty and picturesqueness of every locality are so largely dependent upon the disposition of its scattered trees, its groups and masses of plantation, that no landed proprietor and no forester should entirely lose sight of this, even in laying-out woodlands which are planted mainly for profit; and, though in Nature we sometimes meet with scenes of such surpassing grandeur that any attempt to heighten their effect by planting must necessarily prove futile, yet, in the majority of cases, considerable improvements in a landscape may be effected by a judicious choice of trees combined with such a mode of planting as shall be in accordance with the character of the district. Thus, the park or any other wide expanse of comparatively level, or gently undulating surface, through which the sluggish stream glides almost noiselessly, or expands into a placid lake, requires the accompaniment of rolling masses of underwood, dipping to the water's edge, and from amongst which spring up round-headed trees of various kinds, while here and there a graceful Alder, a spreading Ash with recurvate branches, or a Willow which "grows aslant the brook, and shows his hoar leaves in the glassy stream," give both beauty and variety to the scene. On the other hand, the mountain defile, through which the rapid torrent bounds from rock to rock, and above which peak rises above peak, is most befittingly clothed with the tangled thicket, the spiral-headed Larch and Spruce, the Scotch Pine, and the Mountain Ash, and when upon the slopes such groves of Fir or Pine have been so thinned out as to produce a dense canopy supported only by a few trunks of large size, the scene becomes one of solemn grandeur.

Whoever has attentively studied the effects of light and shade upon the landscape, must have remarked that when a house of any considerable size is bounded only by the skyline, or backed and flanked by open lawn and bare arable and pasture land, there is a degree of indistinctness about it which considerably lessens its effect upon the spectator, inasmuch as the whole of its surroundings participate in the strong light which should be concentrated upon the building. But when such a house is backed up by a well-selected mass of trees, planted at a proper distance to secure the desired effect, the whole building becomes boldly prominent, and if it contains lengthened horizontal lines, the breaks produced by a few trees planted directly in front of it not only increase its apparent size, but also give it an air of lightness and elegance. Similar effects may be observed upon the boles of tall trees which occupy the front lines of a dense plantation, when the sun's rays strike them in the morning or evening, according as they happen to be west or east of the observer.

Considered as the surroundings of the abodes of people of taste and refinement, trees are indeed beautiful at all seasons, yet as beauty alone satiates in time, it is only when they combine this with utility that they become in reality "a joy for ever." On account of their uniformity of colour at all seasons of the year, and also from the absence of any tints, properly so called, evergreen trees afford less real pleasure to the beholder than the deciduous kinds. During the spring most of the latter assume a certain lightness and elegance of form, as through and beyond the delicate tints with which they are clothed, the anatomy of their branches and twigs is, more or less, strikingly displayed as the winds wave them to and fro, and gleams of sunshine or dark patches of shadow alternately reveal and conceal the forms beneath. In summer they strike us by their intensity of shade, as they "hide us from day's garish eye"; in autumn by their depth and variety of tint; and in winter by their breadth of shadow as the sun skirts the southern horizon, while at the same season, the endless ramifications and interlacings of their branches are distinctly traceable, down almost to the smallest twig, as they stand out in relief against the frosty sky or become thickly coated with rime.

The planter who combines taste with soundness of judgment will produce striking effects with few subjects, just as the Greeks of old, with four colours only, produced results in painting which far surpassed those of a later and more degenerate age, when chemistry had largely increased the number of pigments which figured on the palette. Whoever has the opportunity of conducting such planting on a large scale should bear in mind the fact that to produce grand and striking effects one or two bold and well-wooded prominences, or the same number of deep recesses, are worth scores of minor irregularities; also, that while the mistakes of the farmer, or even those of the gardener, may sometimes be seen and rectified in one short season, those of the professed improver of landscape may take years to realise and a lifetime to rectify.

In thickly-wooded districts much more immediate and, consequently, more striking effects may be produced by thinning than by planting. The judicious opening out of a large wood greatly increases its apparent extent, and this, whether it be viewed from a distance or carefully observed in passing through it; the variety and succession please, while, at the same time, they arrest the eye. Where there are also considerable irregularities of surface, the clearance of a space between the highest and the lowest ground, so as to enable the distant observer to see the trunks of the upper trees over the tops of the lower ones, and across a clear space of turf or arable land, gives greater height to the wood. But to produce the most pleasing effects, either by planting or thinning, the intricacy should be such as to avoid uniformity on the one hand and confusion on the other. The beauty of outline, whether in single trees, in groups, or in plantations on a large scale, is that which is broken rather than regularly sweeping, affording the greatest variety of forms without a constant succession. Broken ground undoubtedly admits of more ornament than that which is level, but even here too much planting produces the same result as large masses in flat districts—it loads the scene. In looking upon such I have often been reminded of a saying of the famous Apelles, who, when he saw one of his pupils painting a Helen and loading her with ornaments, remarked, "Young man, not being able to paint her beautiful, you have made her rich."

It is only by a close study of Nature that the landscape gardener can attain to anything approaching perfection in his art. To insure that harmony which is so highly essential, his principal effects must be produced by trees indigenous to the district, otherwise he will destroy that unity of character which should pervade all large compositions. Much has been said and written about the study of landscape painting as being an essential for him who aims at the improvement of real landscape. The striking effects observable in the works of our best painters are such, that while we may never have seen their exact counterparts in Nature, they often excite the wish that we could see them realised. As a suggestive monitress, or as the assistant and handmaid of Nature, Art may do much, but it must not be forgotten that under the influence of the artist's softening pencil the most picturesque scenes often assume beauties not their own, and also that the operations upon the canvas are much more under the control of the artist than those attempted upon the face of Nature, while the growth of deformity is frequently more marked, if not more rapid, than the development of beauty. The painter turns out a finished picture which time only mellows; it can be seen under only one aspect, and as it appeared at one season of the year, whereas the work of the landscape gardener has to be seen at all seasons, and judged under a variety of aspects. When, however, one observes the reckless manner in which noble prospects are sometimes broken up or frittered away by the successive dotting of single trees, or of small clumps, it is impossible not to wish that the immortal Claude had been studied and accepted as a model, for in his "Liber Veritatis," which consists of about 200 drawings, he has introduced only three or four single trees.

Happily for the present generation, the rage for disfiguring trees and shrubs, by sculpturing them into unnatural forms, has passed away; and, though for a short time, it was re-imported from Holland after the Revolution, Lord Bacon dealt a death-blow to the system when he wrote "As to the making of knots and figures, they be but toys; you may see as good sights many times in tarts. I do not like images cut out in Juniper, or other garden stuffs: they are for children." But, unfortunately, even now we have sometimes to lament the disfigurement of rural scenery by injudicious lopping and beheading; for, to the farmer's eye, the prolific, though pollarded and mutilated, Oak and Ash, and the cropped, but yielding, Willow are more valuable than the best specimens of free-growing, hedgerow timber. Undoubtedly, the finest landscape effects are to be obtained from trees which have neither been clipped into deformity nor elbowed into insignificance.

The literature of what we have called ornamental forestry is too diffuse to be of much practical value to the student; but occasionally we meet with sentences of deep import in the writings of our poets and essayists, as when Mason says, in speaking of the adornment of hilly districts:—

> Rich the robe,
> And ample let it flow, that Nature wears
> On her throned eminence! Where'er she takes
> Her horizontal march, pursue her step
> With sweeping train of forest: hill to hill
> Unite, with prodigality of shade.

Or the author of the "Revival":—"That most engaging feature of landscape—a portion of lawn on the slope of a hill, peeping above wood, and every way enclosed by it." And again, "Belts may be serviceable expedients for mere perambulations, but can seldom be made accordant with freedom of landscape. They absolutely deface the vicinity whenever made receptacles for a long and thin concatenation of slender stems."

A. J. Burrows.

THE RED-BERRIED ELDER.

Allow me to inform Mr. Fish (p. 476), that this Elder comes quite true from seed; at least such is my experience with regard to it. I cannot, however, say whether or not the properties of the fruit are identical with those of the black-berried or common kind, but the birds devour it greedily, almost as fast as it becomes fairly coloured. If Mr. Fish can obtain ripe berries of this plant, he will, I think, find little difficulty in getting them to vegetate, but success in its growth for any length of time may not be so certain. Many years ago, when the late Sir John Nasmith was on a visit at this place, he spoke so highly of the effect produced by this plant when in fruit, at Dalwick, in Peebleshire, and at other places on Tweed-side, that plants of it were obtained and carefully planted in the shrubberies and coverts here, where for a season or two they appeared to thrive, and fruited freely. Some of the ripe berries were gathered and sown, and abundance of plants was the result, and these were in due time planted out; but they have all entirely disappeared. The common Elder is a weed here, and a rather troublesome one too; reproducing itself by means of self-sown seed where it is by no means wanted. But the red-berried variety has never done so, as far as I can ascertain, and the fact of the blackbirds, &c., being very fond of the ripe fruit does not account for this, as the passage of such seeds through the stomach of birds is not generally found to have destroyed their vitality. The plant in question, however, may be less hardy than its black-berried congener; or, perhaps, the soil or climate of this part of Suffolk may be in some way unsuited to it. P. Grieve.

Culford, Bury St. Edmund's.

—— The Red-berried Elder growing in Scotland, introduced and brought into notice, I believe, by the late Sir John Nasmith, though of great value as an ornamental shrub and deserving of more extensive cultivation, should be distinguished from its splendid and dazzling relative the Sambucus racemosa, which is to be met with in the Black Forest and on Mont Cenis, and of which Sir William Hooker thus wrote (in a private letter to a friend):—"The plant is the 'Racemose Elder,' (Sambucus racemosa) a mountain plant of the middle and south of Europe. I do not wonder that your sister was struck with it in its native hills." Loudon, the great authority for trees and shrubs, says of it, "This tree has a splendid appearance when covered with its panicles of fine large scarlet fruit." Captain S. E. Cook (a great tree lover and traveller), says that the "panicles of fruit resemble miniature bunches of Grapes of the most brilliant scarlet," and that when in perfection, he thinks it the most beautiful wild fruit which he ever saw. "It grows freely in England," he goes on to say, "but is very seldom found in British gardens of such a size as to display its beauty. Loudon recommends its being budded on the common Elder to give it vigour." The brilliancy of the berries is perfectly dazzling. They do not grow in the form of the Black-berried Elder, or of the Red-berried Elder alluded to in The Garden, but in pointed clusters more resembling miniature bunches of Grapes. I have never met with any Nurseryman who had this shrub, but it has, I know, been raised from seed in South Wales in one locality, where it grew into a tree, bore freely, and was increased by cuttings. Nothing can exceed the beauty of this species of Elder, the colour of the berries being that of scarlet sealing-wax, while the other species or variety is of a duller crimson, and grows in a less graceful form. A.

PRUNING TREES AND SHRUBS.

With much that "J. S. W." (p. 485) says on this subject I perfectly agree, but respecting some other matters on which he has not treated something may be said. The pruning of Conifers is, I know, too often performed at the wrong time, yet "J. S. W." has not alluded to it. I well remember, more than fifty years ago, being employed with others in pruning a plantation of young trees of Spruce, Silver and Scotch Firs, of some ten or twelve years' growth, on a high, bleak, and cold situation, and, the operation being performed in winter, the practice taught me at that time I never forgot, for the next winter it would have been easy to have gathered cartloads of the resin which exuded. It collected in lumps at the base of every cut branch, and showed in the most unmistakable manner that the very life blood of the plants was being drained away. This was done under the name of science, but it occurred in an age when bleeding human beings was also done under the name of science. Well, the latter has, in a great measure, been abandoned, and so ought pruning Conifers, excepting at a proper season. I have repeatedly pruned Conifers in August, and on one occasion I think I operated on the limbs of some large Cedars of Lebanon—that encroached on and overhung a walk—in the month of July, and that with the best results, there being scarcely any bleeding, and the growth the next season did not appear to have experienced the least check. Of course, many kinds of trees could not be pruned at that season, but there may possibly be even some deciduous trees which might be cut early in the autumn with advantage; there are one or two concerning which I never could fairly find out the right time to prune, and one of these is the Sycamore, which, if cut in winter, loses gallons of sap in the spring, when growth commences; and the same happened in the case of the Birch, if I recollect rightly. The common Laurel may be cut at almost any time with impunity, but, as it seldom happens that pruning improves the appearance of any shrub, it is often best to delay it until spring, when the growth which takes place soon after restores the fine appearance of the plant. For a like reason, spring is a good time to cut Ivy well back, although I have cut it pretty close in in July; but then it was in a vigorous state, and speedily recovered its foliage. Some plants seem to dislike the knife more than others, and the Portugal Laurel suffers from cutting in most places, while I have seen the common one cut with shears in July, and make a fresh growth after that, which also ripened; but the situation was a favourable one, otherwise such treatment could not be generally adopted. Therefore, a knowledge of the locality as well as of the plants to be operated on must to some extent guide the pruner. A Retired Gardener.

PINUS INSIGNIS AND ITS TIMBER.

Some interesting accounts have recently appeared in The Garden on the growth of this Pinus in different localities, and one of the writers on the subject, Mr. Garland, solicits information respecting the quality of the timber of this Pine, but thus far without any very satisfactory response. I am unable to speak of it as grown in Britain, but as grown in its native habitat at Monterey, on the coast of Upper California, it is of the very poorest. The entire forest of it, at the time of my stay on its borders, belonged to one gentleman who had not realised much from it, and that little was in converting it into charcoal and cutting it up into cordwood for firing, a condition in which it was shipped to the San Francisco market. The wood is very coarse, brittle, and resinous, and altogether unfit for planking. A most common sight in the forest was living trees with large pieces chopped out of them at about 4 ft. above the ground, and this had been done by the inhabitants of Monterey for firewood. As a large portion of the forest is growing on a dry, calcareo-arenacious soil, I conclude that this Pine would do well on the chalky soils of the south of England, more especially near the sea. It is highly ornamental, but when "S. D." writes that "Pinus Cembra comes nearest to it of any Pinus I know as regards colour and habit," I am afraid that people may think me enthusiastic. However, I would advise "S. D." to contrast the two Pines once more, and see well to it that there is no mistake as to the proper names. The ornamental character of this Pine is universally admitted, and though large plants of it have been killed in this country during exceptionally severe winters, the fact of young plants being cheap, and the all but unequalled rate at which they grow, ought to encourage people to plant again. Geo. Syme.

Elvaston Nurseries, Borrowash, Derbyshire.

BEECH TREES AND UNDERWOOD.

It surprises one to find a man of Mr. Knight's experience defending and corroborating the absurd statements of M. Lavallée, respecting the vagaries of plants. But Mr. Knight does not quote me correctly or fairly. So far as I remember—for I cannot refer to the back numbers containing my remarks at present—I did not say the Beech was "the worst tree in the forest for injuring and destroying underwood," as Mr. Knight puts it. What I did say was that it was "one of the worst," or something to that effect and to this statement I adhere, and I shall be much surprised if foresters of experience do not corroborate my statements, and I shall be equally surprised if Mr. Knight is able to tell me where I shall see a Beech wood or forest, of mature age and planted as thickly as our woods generally are, where underwood thrives and flourishes under the trees or even maintains a tolerable existence—that is, where the underwood has not been recently planted. I never saw such a thing. I showed M. Lavallée's remarks to a forester near here who has had forty years experience of woods in different parts of England, and he remarked that the Beech was one of the worst trees he had to contend with where underwood had to be kept up. I have some recollection of the Floors Castle estates and neighbourhood, and I think Mr. Knight need not go far from home to convince himself of his error. One writer says that even "Grass does not grow readily under the shade of the Beech, and I rather think, also, that Mr. Heath, in his recently-issued book entitled "Our Woodland Trees," has something to say on the same subject. It is quite certain, at all events, that the Beech has a bad reputation for destroying underwood. As to the Walnut, I do not know what M. Lavallée may have "meant" in saying that "undergrowth absolutely refuses to live under the shade of the Walnut," but it was only my concern to interpret his words as I found them, and we have no reason to suppose that the writer meant anything but what he said. Let me say, in conclusion, that when speaking of the Beech destroying the undergrowth in my former letter, I said where "planted extensively," but "planted thickly" would have better expressed my meaning. Mr. Knight, I think, knows the Drumlanrig estates, in Dumfriesshire, where there are tracks of Beech plantations, under which hardly a green blade of any kind is to be seen, a statement which I have no doubt Mr. Thomson can confirm.

J. S. W.

—— I have never met with underwood making good growth under Beeches, where any quantity grew together. Rhododendrons and other evergreens have been planted here under Beech trees, but they either eventually die, or only partially exist if within 20 yards or so of the trunks of the Beech. Clumps of Beech here in open, elevated spots have scarcely a vestige of herbage under them. I could point out a remarkable instance where Walnuts are planted extensively in woods, in quantities together, with underwood growing most luxuriantly, viz., Laurels, Hollies, Rhododendrons, &c., on clay in a low situation.—Geo. Bolas.

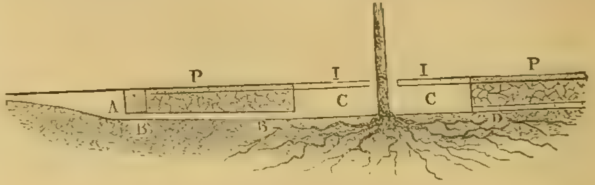
—— Permit me to corroborate "J. S. W.'s" remarks regarding this subject. I resided for several years in a chalk district in Hampshire, where Beech woods and single specimens abounded, and I cannot call to mind a single instance in which there was healthy underwood growing beneath them, that is, where the branches came anyway near the ground. On the contrary, I have seen acres of ground covered with Beech trees where there was scarcely any living vegetation beneath them. When one comes to consider the dense foliage which a healthy Beech tree bears, and also its masses of surface roots, I do not see how it could be otherwise.—H. J. Clayton, *Grimston Gardens, Tadcaster.*

Dynamite and Tree Roots.—We find this of great use in blowing up large tree roots. The charge of dynamite will do in a few seconds what it would otherwise take several men a whole day to do. It has, however, this drawback; it is not safe to apply it to any root, unless at a considerable distance from all buildings. In using the dynamite, it requires especial care in connecting the fuze and cap with the dynamite, more especially if the dynamite gets frosted, as it requires to be thawed before it can be connected with the cap. Lately we have used a good deal of it in stubbing tree roots.—J. Miller, *Clumber.*

NEW PLAN OF WATERING STREET TREES.

A good deal has been done lately in London and other towns in the way of planting trees in the streets, but I have not seen any planted hitherto with any regard to the natural requirements of the tree. The roots are placed beneath paved roads and footpaths P P, with an iron grating surrounding the stem, which is even sometimes closely surrounded by the paving stones themselves. When the water is thus drained off into the sewers, what is to become of the trees? The following method of watering them is so simple, that I cannot help thinking it must be employed somewhere, but in case it may be new to some about to plant trees below pavements, I will describe it. The water, as it runs along the gutter A on its way to the sewer grating, is drawn off by a pipe B B, which is placed slightly on an incline, and runs into the space C C round the stem of the tree below the usual iron grating I I. If the space be small, the water may be dispersed by pipes made of common drain tiles D placed radially round the tree. In this way the tree may be well supplied with water, while any very heavy fall of rain will run off into the sewers in the usual way. Herbert Birkett.

55, New York Street, Manchester.



New Plan of Watering Street Trees.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Irish Yews.—Some notes having appeared in The Garden about Irish Yews opening and spreading out in an awkward manner when old, allow me to say that I used to adopt the following method of preventing this. When the plants have grown to the size which one wishes them to do, and before they show indications of opening out, let a stout wire ring or two down on the plant over the top, about the same girth as the plant. These rings can be worked in amongst and hid by the small branches. Such appliances will keep the plants perfect pillars for years.—T. Williams.

White Azaleas Out-of-doors.—Several bushes of these grow here in the open air that have evidently been out some years. I hope to make an experimental bed of various kinds next spring, as I see no reason why many other Indian Azaleas might not succeed out-of-doors besides the white one, seeing that Camellias grow well as single bushes on Grass, and that they are now covered with buds in various stages of development.—J. Groom, *Linton, near Maidstone.*

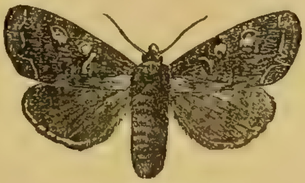
Grouping Oaks in Parks.—Amongst all our native trees the Oak stands pre-eminent; in fact, to my mind, a park without Oaks is like an orchard without Apple trees, it is devoid of its greatest source of interest; and a wide expanse of verdure, in which the Oak has no place, always impresses me with a sense of incompleteness. The Oak amongst trees is the emblem of strength; its sturdy growth, spreading habit, and dense foliage render it both useful and ornamental. Happy are those who possess in their domains some fully-developed examples of this fine old English tree. This advantage can, however, only be enjoyed by the few. A generation is required for the proper development of the Oak, and it is this fact probably which deters the owners of newly-formed parks from planting it; but if we cannot have ancient specimens we may, by planting it in groups, obtain a very fair idea of the true beauty of the Oak. By grouping a few young trees we may effectually realise the characteristics of an aged specimen. If planted rather closely the branches soon intermingle, and the group eventually develops those features which form the charm of a large tree. When seen from a distance—and woodland scenes should be always thus judged—the individuality of each tree is scarcely distinguishable, the effect being that of a single, fully-developed, and luxuriant specimen of Oak.—J. Cornhill, *Byfleet.*

GARDEN DESTROYERS.

THE POT-HERB MOTH.

(HADENA OLERACEA.)

The caterpillars of this common moth are frequently very destructive to culinary vegetables. They do not, however, confine their ravages to the kitchen garden, for they have a great partiality to Dahlias, and in the autumn do much damage by eating their petals and so spoiling the blossoms. As they never feed during the day they are seldom seen on the flowers until after dusk, unless they try and hide themselves among the petals, as they sometimes do; if, however, Dahlias are attacked by them they may generally be found during daylight, resting hidden under the leaves. In the kitchen garden they attack many kinds of vegetables, particularly Cabbages Lettuces, and Turnips; they also feed on the leaves of Gooseberry and Raspberry bushes. The only way of ridding a garden of these pests is by picking them by hand off the plants on which they are feeding. Their natural enemies, fortunately, are numerous. Several kinds of ichneumons lay their eggs in them, the grubs from which feed on their bodies and eventually kill them, and many kinds of birds devour them eagerly. Cold and wet weather is very hurtful to them, so that in all probability comparatively few reach maturity. The moths make their first appearance towards the middle of the month of May. They are, however, seldom seen unless search is made for them, as, during the day, they generally rest on the stems of trees, palings, or in hedges, where they get as much out of sight as possible, or are so much the colour of the substance on which they are resting that they are not noticed. It is only after dusk that they may be seen on the wing, unless they happen to be disturbed; from this it will be seen that it is almost useless to try and lessen the numbers of this insect by killing the moths. The female lays her eggs about the end of May or the beginning of June, on the leaves of the various plants which will serve the caterpillars for food. They are soon hatched, and at once begin feeding on the leaves. They increase in size very rapidly under favourable conditions of food and weather. In about a month they are fully grown; they then leave the plants on which they have been feeding, and, having buried themselves in the ground, become chrysalides, from which the moths emerge in August, from whose eggs a second brood of caterpillars soon makes its appearance. These in due course become chrysalides, in which state the insects remain during the winter and until the following May. The moth measures about 1½ in. across the wings when fully expanded. The thorax and body are stout. The latter is of an ashy-grey colour, with a somewhat darker broken central line. The antennæ are smooth and tapering. The head, thorax, and upper wings are reddish-brown; the latter are marked with several darker streaks and irregular transverse bands, and various small white dots. Near the middle of the upper margins of the wings are two yellowish spots, the one nearer the base being small and round, the other larger and somewhat kidney-shaped. Near the outer margins of the wings there is a fine, whitish, very irregular line, the margins themselves being deeply fringed. The lower wings are of a dirty white colour, with the margin blackish. The caterpillar, when full grown, is about 1½ in. in length and about the thickness of an ordinary quill. It has thirteen joints, including the head, eight of which—namely, the first three, the sixth, seventh, eighth, ninth, and last joints of the body—bear legs. The colour of the caterpillar varies from a greenish to a yellowish or reddish-brown dotted with white, and with a dark brown line down the middle of the back and a pale line on either side. There is also a line on each side, just above the legs, of a bright yellow colour, on the upper margin of which is a blackish line. The chrysalis is of a bright reddish-brown.

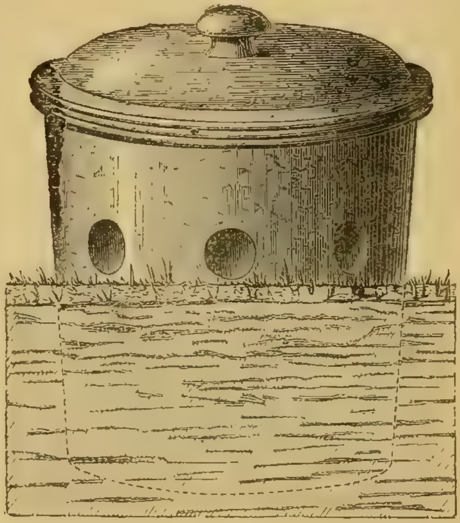


Pot Herb Moth (Hadena oleracea).

S. G. S.

SNAIL AND SLUG TRAP.

The trap figured below is a very simple one. It consists of a kind of pot provided with a number of holes in the side and a closely-fitting cover, the pot being plunged into the ground so that the holes are just level with the soil. The pot is glazed inside, and the cover is made to fit tightly, so as to keep the bait that is used in a fresh condition. The holes are conical, so that when once the snail enters the pot it has great difficulty in getting out again. The interior being thus kept cool and dark has a great attraction for snails, slugs, mole crickets, woodlice, and other plagues which burrow in the earth. As for the bait to be used, that depends in a great measure upon the pest which we wish to destroy. A saucer of strong-smelling stale beer, or beer mixed with vinegar, is an excellent bait for snails, slugs, and woodlice, the olfactory nerves of these destructive pests being particularly sensitive. Stale wine is much used in France as a bait for the mole cricket, and earwigs seem to enjoy fresh bones which have not been too well picked, stale soup, or pot liquor with great gusto. For field mice and other four-footed vermin, flour, meal, corn, or bran may be used. As a rule, the traps should be placed in a shady position, so as to keep them as cool as possible, snails, slugs, and woodlice hating light and warmth. In the case of slugs and snails the greatest harvests ought to be made in damp or wet weather, and approaching showers ought therefore to be the signal for putting fresh bait in the traps. These pots are sold by M. Pelletier, 20, Rue de la Banque, Paris, but they might be easily manufactured by boring a number of holes in a flower-pot with an old three-cornered file, the point and edges of which have been well sharpened on a grindstone. If plenty of water and silver sand be used a hole is very soon made. The cover may be formed of a flower-pot saucer, and should be fastened down with ordinary clay.



Pot trap for snails, slugs, &c.

C. W. Quin.

Paraffin Oil as an Insecticide.—Some time ago Mr. Knight, of Floors, published a receipt in a contemporary which I sent to Tweed Vineyard for exterminating bug, &c., but he did not publish it correctly. I never use less than three wine-glassfuls of paraffin to four gallons of water, and it is instant death to bugs without the least injury to tender stove plants. My way of mixing and applying it is to put the oil first into a pot and fill in the water vigorously with a syringe. In applying it, one man is kept lifting a syringe full out of the mixture and discharging it into itself, while another applies it to the plant. In two or three minutes it is syringed off again with clean water. It is only very partially effectual when mixed at the rate of one glassful to four gallons of water.—D. I.

THE FLOWER GARDEN.

ROCKERIES AND ROCK PLANTS.

In the construction of a rockery, if bright-coloured or glaring white stones must be used, they should be coated with cement to tone down their colour. A rockery never looks so well as when timeworn and the stones are clothed with Mosses. Shakespeare says "there are sermons in stones," but new, bright-looking stones tell nothing. I was forcibly reminded of this passage in "As You Like It" when looking at the rockery at Castle Hill House, Huntingdon, some time ago. It is not large, but it is tastefully arranged in an excavation in the side of the hill, on which stood, many years ago, the old Castle of Huntingdon, and this hill or mound is all that is now left to mark its site. What makes this rockery peculiarly interesting, too, is the fact that it is mainly composed of the old stones that have been from time to time dug out of the hill. They are relics of the old Castle, many of them bearing traces of man's handiwork in the carvings with which they are adorned. Thus, this is not only a charming little rockery, it is more—it is a museum of ancient history, running back for centuries into the past. In the construction of rockeries small, narrow ridges of rocks should be avoided, as the plants growing thereon suffer so much in dry weather. It may not always be easy to exactly imitate the conditions under which Alpine plants grow naturally, but building up high, narrow masses of stone, through which wind, sun, and frost can penetrate will certainly prove a mistake, so far as the culture of Alpine vegetation is concerned. Broad masses of rockwork of moderate height will be found to be the most suitable. There should, of course, be sinuosities and variations in outline, and even a small rockery may have its apparent elevation added to, by planting on it a suitable shrub or two. The outline may often be broken and improved by planting such trailing shrubs as Cotoneaster microphylla, and allowing them to hang over. Several of the Berberries, such as B. empetrifolia and stenophylla, are well suited for planting on the crown of a rockery; their growth is so light and elegant scarcely anything can surpass them. Then again there are Bamboos, including such kinds as Metake and Fortunei variegata. Amongst hardy ornamental Grasses, Eulalia japonica should not be omitted. Aralia japonica and Sieboldi are both effective plants for rockeries. In sheltered situations, the Australian Dracæna indivisa would, in most places south of London, stand the winter, and so would the Fan Palm (Chamærops excelsa). The appearance of the rockery would be very much improved by planting a few of the plants which I have named on the salient points, not in any formal order, but just one here and there. The northern side of such plants as throw a little shade, might be seized upon for planting anything that did not thrive in hot sunshine.

Alpine plants are usually propagated by division of the roots or offsets, or by seeds; the former is by far the commonest plan, and is usually performed just about the time when growth begins. The growth of most plants, of course, begins in spring, and, from February onwards propagation by division may go on as each family shows signs of moving. If propagation by cuttings be resorted to for some kinds, summer will be the best time for that operation, when the growth is soft, and they should be inserted in a prepared bed in a shady border. If it be possible, duplicates of all the choice and rare kinds should be grown in pots. A choice collection of Alpines in pots would be as interesting to people who really loved flowers and were interested in their culture, when once they had become acquainted with them, as a collection of greenhouse plants would be, and they would cost nothing for fuel and would require much less attention; 5-in. or 6-in. pots would be large enough for most of them. The pots should be plunged up to their rims out of doors in summer in ashes or new Cocoa-nut fibre. If the latter be used, the soil will not dry quite so fast as it otherwise would do; and so, perhaps, something may be gained by less watering being required. This, however, should not make us indifferent to their wants. A good and liberal supply of water is a most important matter, and in the evenings succeeding hot days a watering overhead with a rosed pot or the hose will be found to be very beneficial in addition to a good supply of moisture at the roots. If the pots are plunged in Cocoa-nut fibre they should be placed on a good layer of ashes 3 in. or 4 in. thick to keep out worms. If, however, at any time worms have got into the pots, watering with lime-water will dislodge them without injuring the plants. Place 8 lb. or 9 lb. of new lime in a barrel of soft water; allow it to settle, and then use the water.

When autumn sets in, or before severe frost, the plants should be moved to a cold pit, and be plunged to protect the roots from frost and to keep them in an equable state as to moisture. How charming it would be to have a low house for Alpine plants in winter laid out in beds and winding paths! If the plants were plunged in Cocoa-nut fibre, very little labour would be required. With the Alpines might be associated a few of such plants as the following: Farfugium grande, Bambusa Fortunei, Dracæna indivisa, Chamærops excelsa, C. Fortunei, several of the Euonymus, and other variegated shrubs of Chinese or Japanese origin. To these might be added, if space permitted, Erica codonoides, E. herbacea, and others; also a few berry-bearing plants, such as Skimmia oblata and Aucubas. Such a house would be exceedingly interesting all through the winter and spring, when the Alpines might be plunged in the open air again. The house need not be heated artificially, and should be provided with abundant means of ventilation. In summer it might be made gay with Clematises, Lilies, Fuchsias, and hardy plants (such as Phloxes, Carnations, &c.), that would do out of doors in winter or in frames with very slight protection during severe weather. The season for removal to the open air would, for most species, be the time for dividing and repotting them. Generally from 1 in. to 2 in. of drainage will be found to be sufficient. Over the drainage should be placed a little rough peat or loam to prevent the finer particles of soil blocking it up. In selecting the right kind of soil for the different species it may be stated as a rough sort of guide, and one that is easily remembered, that all plants having masses of fine, hair-like, fibry roots do best in peat or a compost of which peat forms a considerable part, whilst plants having strong, fleshy roots succeed best in loam or where loam preponderates. Some of the more delicate kinds should have a little grit or lime rubble mixed with the soil. When a plant is difficult to cultivate the cause may not always arise from unsuitable soil; climate, pure air, shade, and shelter, have oftentimes as much to do with the health of a plant as soil. Many Alpines—indeed most of those that give any trouble—have been brought from a situation where the air, from its altitude, is thin, cool, and pure in summer, and where in winter they are snugly covered up in a mantle of snow. Though such conditions cannot exactly be imitated with us, yet it generally happens that by shading, by simply sticking a branch over a plant during very hot days, and by affording a little shelter in winter in severe weather, a fair amount of success is obtained. In other words, success in this, as in all other matters, will be in proportion to the trouble taken to ascertain the respective wants of the plants and the efforts made to supply them with what s needful.

In some places in the country stubs and roots of old trees are plentiful about the woods; these, if gathered together and tastefully disposed, form a suitable home for Ferns and creepers. Somehow I do not like the idea of mixing stones and roots together. I have seen it done, but it does not seem natural. According to my view, the rockery and rootery should be distinct, the one garnished with Ferns and creepers, the other furnished with Alpine plants; but, although I think they should form distinct features, yet they may be appropriately placed in the same locality. Both need not fall into the same view, but a winding path may lead from one to the other, and, if there be any difference in the level of the ground, the rootery for Ferns should occupy the lowest position, and if surrounded by lofty banks so that the light falls on the plants in a subdued manner all the better. This effect may be easily created by digging the soil out of the bottom and throwing it up to heighten the sides; but, in doing this, care should be taken to have the best soil on the top.

The following are lists of Alpine plants and hardy Ferns suitable for rock and rootworks:—

Rock Plants.

Iberis corifolia
    sempervirens
Globularia vulgaris
Erinus alpinus
Veronica Teucrium
    rupestris
Arenaria balearica
    purpurascens
Linum alpinum
Phlox frondosa
    Nelsoni
    setacea
Geum montanum
Silene acaulis
Thalictrum minus
Onosma taurica
Papaver nudicaule
Gysophila repens
Gentiana acaulis
    Catesbæi
    verna
Teucrium pyrenaicum
Aster alpinus
Lychnis viscaria fl.-pl.
Ramondia pyrenaica
Dryas octopetala
    Drummondi
Soldanella alpina
Arctostaphylos Uva-ursi
Erica herbacea
Andromeda tetragona
Acæna novæ Zealandiæ
Saxifraga oppositifolia
    hypnoides
    rosularis
    and others
Campanula carpatica
    hirsuta
    turbinata
    pumila
Geranium sanguineum
    armenum
    Endressi
Primula pulcherrima
    farinosa
    japonica
    acaulis
    cortusoides
    and others (in shade)
Polygonum Brunonis
Hepatica angulosa
Dianthus fimbriatus
Lamium aureum
Cerastium tomentosum
Cistus creticus
Myosotis palustris
Saponaria ocymoides
Epipactis palustris
Cypripedium spectabile (damp places)
Omphalodes verna
Arabis albida variegata
Potentilla formosa
    and others

Cornus canadensis (shady, sandy peat)
Achillea Clavennæ
Sternbergia lutea
Œnothera pumila
Genista sagittalis
Epilobium Dodonæi
Dodecatheon Media
Adonis vernalis
Polygala chamæbuxus
Gaultheria procumbens
Erythronium americanum
    dens-canis
Thymus lanuginosus
    thuriferus
    Serpyllum
Alyssum saxatile
Aubrietia Campbelli
Linaria alpina
Lithospermum prostratum
Lysimachia nummularia
Plumbago Larpentæ
Salix reticulata
Convolvulus mauritanicus
Coronilla varia
Empetrum nigrum
Epigæa repens
Genista prostrata
Helianthemum (Sun Rose, many kinds)
Hypericum humifusum
Vinca elegantissima
Vicia argentea
Anemone nemorosa fl. pl.
Bulbocodium vernum
Iris cristata
    reticulata
    nudicaulis
    pumila
Daphne Cneorum
Cyclamen europæum
    hederæfolium
    vernum
    Coum
Galanthus nivalis
    plicatus
Nierembergia rivula
Linum alpinum
    flavum
Oxalis Bowiei
    floribunda
Scilla amœna
    bifolia
    sibirica
Helleborus niger
Silene alpestris
    maritima
Agapanthus umbellatus
Allium azureum
Sedums (many kinds)
Sempervivums
Colchicums
Yucca recurva
    filamentosa
    and others

Yuccas are especially suitable for forming picturesque groups on the rockery.

Hardy Ferns.

Adiantum pedatum
Allosorus crispus
Asplenium Adiantum-nigrum
    axillare
    fontanum
    lanceolatum
    maximum
    Trichomanes
        multifidum
    viride
    germanicum
    Halleri

Asplenium Ruta-muraria
Athyrium filix fœmina
    f.f. multiceps
        corymbiferum
        crispum
        plumosum
Blechnum Spicant
Ceterach officinarum
Cystopteris fragilis
    alpina
Cyrtomium falcatum
Lastrea filix mas and varieties

Lastrea spinulosa
    Standishi
    dilatata
    montana
    opaca
    Thelypteris
    rigida
    intermedia
Lomaria alpina
Onoclea sensibilis
Osmunda regalis
    r. cristata
    cinnamomea
    gracilis
Polypodium alpestre
    cambricum
    Dryopteris
    flexile

Polypodium vulgare
    v. hibernicum
Polystichum angulare
    a. cristatum
    a. proliferum
    aculeatum
    acrostichoides
    lobatum viviparum
    plumosum
Pteris aquilina
Scolopendrium vulgare, &c.
Struthiopteris germanica
    pennsylvanica
Woodsia hyperborea
    ilvensis
Woodwardia areolata
    japonica

Ferneries are frequently over-loaded with shade. A little shade from overhanging banks, or from trees at a little distance off is beneficial to many species, and enhances the effect, but every gleam of sunshine should not be shut out.

E. Hobday.

CANNAS: THEIR CULTURE AND PROPAGATION.

Cannas deservedly occupy a high place amongst ornamental-foliaged plants adapted for the decoration of our flower gardens in summer. Their stately, massive growth renders them conspicuous in pleasure grounds, and as we now possess varieties which vary much in their leaf tints, running from glaucous green to almost crimson, and many of them being very floriferous, we find that they are alike valuable for beauty of foliage and abundance of flowers. I have remarked that Cannas are but seldom seen in villa gardens, a circumstance for which I think it is easy to assign a reason. In the first place, they are generally considered difficult to preserve during winter, and, again, they are often planted in unsuitable situations, such as in small beds in the centre of the lawn, where they not only fail to harmonise with other plants, but are apt to get beaten down by wind and rain. Their proper place is out of the direct line of sight, a sheltered corner, for instance, backed up by shrubs, where they do not present a too obtrusive appearance, suits them admirably; there they grow freely and flower finely. It must not, however, be inferred that they should be planted where they fail to get full light; it is simply shelter, not shade, that they require. If thus treated they would not fail to give satisfaction, and they would be oftener seen in small gardens than they are at present. Cannas may be successfully grown in pots, and when so treated they are often found serviceable for indoor decoration. They look well by gaslight, and where large-foliaged plants are often required some good potfuls of them should always be grown, as they may be often used in such situations where choicer kinds could hardly be employed without risk. They may be propagated either by cuttings made from shoots taken from the old stools or by seed. In order to induce the formation of suitable cuttings, the old roots must be placed upon a gentle hotbed early in March; after the roots are in position, fill in between them with some good light soil. As the plants start into growth, take off the cuttings when about 3 in. long and insert them singly in small pots, plunging them in gentle heat. They will soon root, when they may be shifted into 4-in. pots, and replaced in the hotbed. From thence they may, when fairly established, be removed to a cold frame, and so gradually inured to the full air and sun. A considerable quantity of plants may be thus worked up from a few strong stools. The seed, which is hard and round, and which gives to the plant the name of Indian shot, must be soaked in warm water for forty-eight hours before sowing, and requires a brisk bottom heat to induce a free germination. The seedlings may be treated in the same way as above described for cuttings, but this method of obtaining plants is hardly to be recommended in a general way, as they are never so strong as those obtained from cuttings. Cannas are gross feeders; they flourish best when the roots can freely ramble where they do not lack for either nourishment or moisture. In France Cannas are generally mulched with good rotten manure, the copious waterings combined with great solar heat inducing a grand development. I have grown them to perfection in Normandy by planting them upon large raised beds, and I believe they do best when the roots are raised rather above the ordinary garden level, as the heat of the sun is better enabled to penetrate to and warm them. They must, of course, be well mulched, or there is a difficulty in saturating them in hot weather. I should recommend a trial of this method to those who may have to deal with a cold soil, as the success of subtropical plants depends quite as much upon the amount of warmth which they get at the root as on that experienced above ground. There need be no difficulty experienced in keeping the roots over the winter. They merely require a cool, dry place into which the frost cannot penetrate. The soil should be cleared away from the roots when lifted, and if packed away quite close they will keep in good condition and come out quite fresh when required for propagation. I have heard the assertion made that if left in the ground during the winter they will push stronger and thrive altogether better than if lifted in the autumn. That they will grow fairly well in this way I have had ocular proof, but that was on a high-lying, dry soil. In soils of a free, light character, and well drained, the roots being protected during the winter, they might be depended on to come up well again. I doubt, however, if whether, after the second year, they would not need lifting and replanting. Perhaps some of the readers of The Garden may have had some experience in this particular matter. In making a selection, due regard should be paid to securing as much variety of leaf-tint and colour of flower as possible. In grouping them together in masses some knowledge of their individual growth is necessary, as they vary considerably in height and spread of foliage. The following varieties are amongst the best, and would give satisfaction:—Bihoreli, distinct, of a good habit, and floriferous; Rendatleri, a tall grower; nigricans, tall, with dark leaves; Annei; erecta, fine growth; and Warscewiczi major. There are many varieties now to choose from, and individual tastes differ, but these are all calculated to create good effects in either large or small establishments. John Cornhill.

The Common Rhubarb in France.—The value of this plant, so prized as an esculent in this country, is differently estimated in France. There it is classed amongst plants of high decorative qualities, and has generally a post of honour assigned to it in the vicinity of the mansion. In rural districts amongst amateurs and peasant farmers, one occasionally finds a stool of Rhubarb which is highly prized for its beauty only, its esculent properties being wholly unknown to them. When the slight feeling of wonderment which one naturally feels at seeing in the flower garden a hitherto considered common vegetable wears off, one cannot but admit that it associates remarkably well with the ordinary inmates of the pleasure ground. A large stool when in flower in an isolated position has an imposing appearance, and there are plenty of situations in large grounds in this country where a few plants of Rhubarb would not appear at all out of character with the surroundings.—J. Cornhill, *Byfleet, Weybridge.*

Lily Growing.—I am sorry to see (p. 5[illegible]8) that my former questions on this subject were not explicit enough to deserve an answer from "Dunedin." I will endeavour to be more definite this time, but I decline to be led into a discussion on the "perennial theory," which has nothing whatever to do with my questions, which relate exclusively to certain statements of "Dunedin;" viz., that Mr. Dod was "deceiving himself and possibly others in saying that he gained a year's growth by buying large bulbs." What I say is that Mr. Dod was right, and that, practically, his advice was good. My argument, briefly formulated, is this: first, that large bulbs of such Lilies as auratum, for example, produce the strongest stems and the greatest quantity of flowers. Secondly, that the bulbs grow large as they grow older up to a certain limit, and under ordinary good culture; and thirdly, that when we buy a large bulb we gain one, two, or three years' growth, just as the case may be. In other words, a three-year old bulb is better than a one-year old one, simply because it is older and consequently larger; the buyer gains two years' growth, and that growth is represented by size, greater vigour and flowering power. This, I apprehend, is all that Mr. Dod means, and this is what "Dunedin" denies, when he states that, by saying he gains a a year's growth by buying a large bulb, Mr. Dod "deceives himself and possibly others." No other construction can be put upon "Dunedin's statement, which is refuted by every-day experience.—J. S. W.

PLATE CLVIII.

EARLY SPRING-FLOWERING SQUILLS.

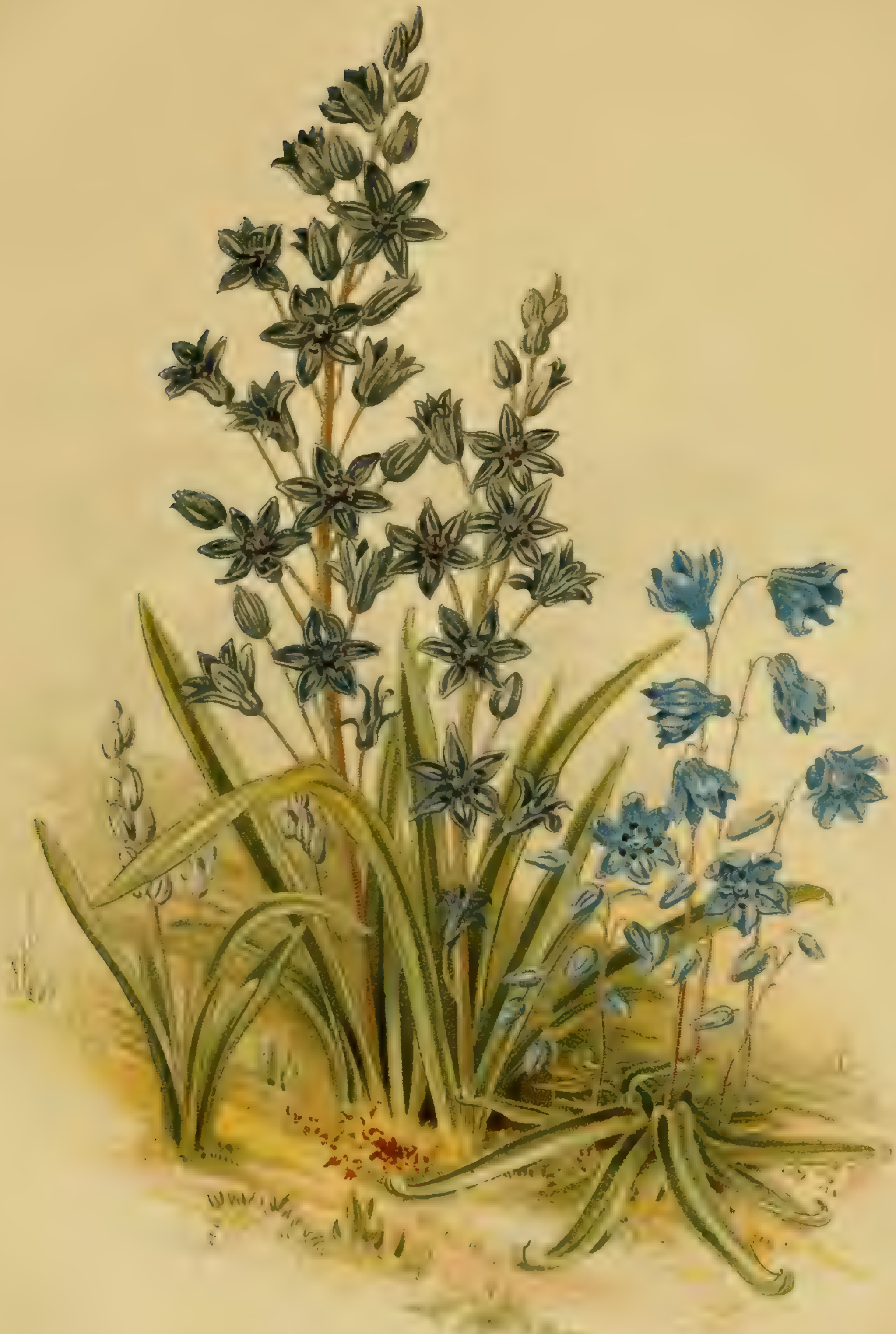
The annexed illustration represents two varieties of these charming vernal gems, which have recently been added to our lists of hardy flowers. A glance at the figures will, however, show that they are but deviations from two well-known and deservedly popular types. Like them, too, they belong to the small group of Squills which flower very early. The larger kind depicted in our plate is the Taurian form of the two-leaved Squill (Scilla bifolia), but it differs from it in being larger in size and more robust in habit; its flowers are also larger and more numerous, and it produces several leaves, thus departing from the bifoliate character generally observed by the type, but which, by the way, is not an absolutely reliable one. This handsome variety was first brought into notice by Dr. Regel, of St. Petersburg, and it is gratifying to see it already in trade lists. The small kind shown in the plate is a minor variety of the brilliant Siberian Squill (S. sibirica), and much resembles the other small variety of it (S. s. amœnula). It is dwarfer than the type, and though it lacks its robustness, and the flowers are somewhat of a lighter shade of colour, this is compensated by its flowering at least two or three weeks earlier, thereby much enhancing its value, and placing it on the same level, as regards earliness, with S. bifolia. Like the type, it has a wide geographical range, but appears to be most plentiful in southern and central European Russia.

Whilst upon the subject of early Squills, it may not be out of place to mention a few other distinct and valuable kinds, though, of course, the line of demarcation between the early and the late spring-flowering varieties cannot be very tersely defined, as they merge into each other according to the season, and notably the beautiful rich blue Italian Squill (S. italica), which is immediately succeeded by the numerous varieties of the Spanish and English Squills, and a host of others. Taking them in point of earliness, we have the early two-leaved Squill (S. bifolia var. præcox), an extremely handsome form, much larger than the type, and one which flowers considerably earlier. Next comes the true S. bifolia, which is succeeded by the varieties carnea and alba, sorts that differ only as regards colour. Acccompanying these are the varieties S. candida and rosea, both in every way much larger, the former with pure white, and the latter with bright rosy-pink blossoms, but apparently not so robust in habit as S. b. var. taurica above described. The minor variety of the Siberian Squill (S. sibirica) opens its blossoms along with these, and is succeeded by the type and its small variety, amœnula. S. amœna, a handsome kind from Central Europe, &c., comes next; it may be recognised from the preceding by the flowers not assuming such a nodding position, nor being so bell-shaped, and also by the darker hue and the yellowish centre.

The culture of Squills in the outdoor garden is by no means difficult. If planted at the depth of a few inches when the bulbs are at rest—that is early in the autumn—in any good garden soil, if not too heavy, and if, when once established, they are allowed to remain undisturbed for years, except perhaps giving them a slight annual top-dressing of manure, the cultivator will be annually rewarded with a display which will amply repay any trouble that may be taken with them. Some kinds, especially the many-coloured varieties of the Spanish Squill (S. hispanica, syn., S. campanulata), and the English (S. nutans), are admirably adapted for introducing into the wild garden by the sides of woodland walks, margins of shrubberies, &c., situations in which they form an attractive feature in spring. Some kinds again, and notably the Siberian Squill, is perfectly amenable to forcing, and associates charmingly with Lily of the Valley, Maiden-hair Fern, &c., as may be seen now and then in Covent Garden Market.

As regards propagation, offsets may be taken from established clumps during summer, and a very interesting, though somewhat slow, mode of procedure is raising them from seeds, which in some seasons are produced plentifully; by this mode many varieties of real merit, both as regards size and colour, have been obtained, and there is still ample room for further improvement in this direction. W.

[The plants from which our plate was prepared were furnished by Mr. Ware and Dr. Wallace.]



HARDY FLOWER GARDEN PLANTS

Valeriana Phu var. aurea, we have found to keep its colour longest in light soil, and in a sunny exposure, but it has only been suitable for winter bedding here, as the gold colour goes off before spring flower garden plants are over. It is useful as an edging to a shrubbery border where it can be permanent, but not in a more prominent place, as it is quite uninteresting after the three months of gold colour, when it begins to grow and flower; cats, too, rub and roll themselves on the Valerian borders, and by bruising the stems, and scratching up the roots, cause the unpleasant smell of the plant to be perceptible even to any one walking past it. Travelling in Northumberland in March, 1868. I was struck by the bright colour of this Valerian in a cottage garden in the village of Ford, and on the spot secured a good patch of it; by striking the tops and cutting up the roots, I got up a fine stock for next winter's work, and from February to April it was very effective.

Mr. Ingram, to whom I sent it, however, found that it was not bright enough for Belvoir, the soil probably being too heavy for it. In the out of the way village of Ettrick (Selkirkshire) I also saw it in cottage gardens, but never in any private gardens, with the exception of those to which I sent it.

There is a very pretty gold variety of Potentilla anserina, the young leaves of which come up golden all through the summer, though, of course, not so bright as in spring. It makes a beautiful gold feather leaf for associating with cut flowers, and lasts long in water. Here I find it to do best in a patch; it is too liable to run to make a good edging plant.

Another beautiful variegated-leaved plant is Achillea Millefolium; whole leaves of this come of a pure creamy white; others more or less white, but if not watched this plant is apt to go back to the green state, which the Potentilla never does, at least here.

It would be difficult to name a handsomer bed than Lobelia fulgens, or others of that class, and the variegated Tussilago Farfara makes, in cool strong soil, and in a moist climate; such a combination is faultless: height, form, colour, all these contrast and suit.

A fourth wild plant, Scrophularia nodosa variegata, makes an excellent edging for a large bed; it was originally picked up by a hedgeside, Mr. James Ray, late superintendent of the Dean Cemetery, has told me. Mr. Ray knew plants well, and first introduced Meum Athamanticum as a hardy, fine foliaged plant about here; and most decidedly it should be meant to be permanent wherever it is planted, for there is great difficulty in getting rid of its roots, which go down 3 ft., and the least remnant of them will grow. We cut over our edgings in summer and never let them flower, thus securing good foliage late as well as early, and, as in autumn it fades into a very bright yellow, it is worth having good strong leaves to become golden. It grows under the shade of Yew trees, which few plants will do. I have seen parcels of the long tap roots for sale as a substitute for Tobacco in some of the Aberdeen markets. Going round the King's Road Nursery, a few years ago, with Mr. Harry Veitch, I picked up what I fancied was another Meum, the habit of which seems different from that of M. Athamanticum. It is more erect, thinner in growth, and has still more hair-like leaflets. It is also equally fine in colour when fading, and its erect habit shows the autumn colour to better advantage; after two examinations, however, Mr. Sadler assured me that the two were identical, and so, of course, botanically, they must be. Nevertheless, we grow them both, and separately; for cutting Mr. Veitch's is the best. I have spent long summer mornings hunting through great patches of Meum Athamanticum in Glen Lyon (Perthshire) where it grows abundantly by the road sides, collecting seeds in hopes of possibly finding varieties, but fruitlessly, as the seeds came up provokingly true. A variegated form would be a great acquisition; but very numerous as are the Umbiliferous tribes, at this moment I can only recall two which come variegated—viz., Celery and Cow Parsnip.

Wardie Lodge. F. J. Hope.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

A Word or Two more about Fuchsias.—I think Mr Williams (p. 498) must have under-rated Fuchsia microphylla, which at one time was certainly one of the most floriferous Fuchsias known, and I simply called attention to it on account of its being so seldom met with. In its early days it was more grown as a pot plant than as one planted out in the flower garden. About the time when it first made its appearance the only kinds generally known were F. gracilis, F. coccinea, F. tenella, and F. conica, the last named being, I believe, the parent of all the large-growing hybrids which followed each other in such rapid succession from about 1833 to 1850. Amongst these, perhaps, the one that created the greatest stir, and certainly originated a fresh strain amongst Fuchsias, was the first white one called F. Venus Victrix, while for outdoor purposes, one about coeval with it, called Riccartoni, maintains a good position even now; and, in fact, it is the best I know of for general outdoor decoration, although some give the preference to Corallina. All are, however, beautiful, and well deserve to be more widely cultivated than they are.—A Retired Gardener.

The Woolly Lavender (Lavandula lanata).—This very much resembles the ordinary garden Lavender, but it may be recognised at a glance by its blunter leaves, which are densely covered with short white down, and also by being a much dwarfer plant. The flowers are borne in the same manner, and are of the same colour and size. It is a native of Spain, and would probably require some little attention in this climate, especially during winter, as its woolly leaves would be liable to be injured by excessive moisture.—W.

Lamium striatum.—Thanks to Mr. Cornhill for kindly replying to my query respecting this Dead-Nettle. The name was new to me, and having, since my query, seen a portion of the plant, I must say that it appears new to me also. The name is a good one, and if any member of this varying family has borne the name of striatum, this must be the plant, as the markings are certainly more striated than maculated. I believe, however, that it will prove to be a striped-leaved variety of L. lævigatum. L. vulgatum, album, mysorum, maculatum, and lævigatum are now by botanists thrown together. Need I remind Mr. Cornhill that L. purpureum is an annual?—Thos. Williams.

Wallflower Seed.—It is indeed remarkable that there should be just now almost a dearth in Wallflower seed. Although the spring was not a severe one it was eminently destructive to the Wallflower seed crop, as a more general failure has rarely been known. Growers who looked for gallons have hardly got ounces, and have been compelled to hold over what little they have saved for their own sowings. The cause of this failure is generally attributed to the rainy time that occurred when the plants were in bloom, but it is difficult to assign an exact reason for such a deficiency. It is worthy of note that the best heads of seed were found where the plants were sheltered by trees. Another fact leads to the belief that late spring frosts may have been the cause of the mischief. Myosotis dissitiflora was also a very scarce crop, as, indeed, it is probable that it always will be. One or two spring frosts do the bloom so much mischief that probably one-half of its seed produce is at once affected. It is such a floral gem, however, that it will always be in request.—A. D.

Mulching with Cocoa-nut Fibre.—This is an excellent plan, especially in the case of small town gardens, where the soil is too often what it ought not to be. I have seen Cocoa-nut fibre applied in small town gardens with excellent effect for years. Its advantages are, that as soon as the beds are planted in spring, a layer of this material will keep down weeds during the whole of the summer. It does away with the cold, chilly, baked appearances so common in the case of stiff soils, and obviates the continual surface stirring, so often necessary. To hungry, sandy soils it gives body, and prevents evaporation and starvation, and, being of an absorbent character, it is nearly always warm; and lastly, its colour is so neutral, that it shows off to perfection nearly every kind of flower or plant.—Thos. Williams.

Water Lilies on Grass.—When walking around the observatory at Harvard University the other day, I came upon two little pools of water in the Grass. Water Lilies were growing in them, and around the margin the German Ivy (Senecio scandens) was in wild luxuriance, sending its shoots, covered with deep green glossy leaves, hither and thither among the Grass. On closer observance I found the pools to be tubs plunged to their brims in the ground and filled with water. These Lily ponds on the lawn formed part of a brilliant little flower garden; they bloomed splendidly during the summer, and some dozens of blossoms were cut from them. As Water Lilies thrive well under such circumstances, who need be without them?

Scarlet Flowers among the Grass.—A novel but pretty way of using Tropæolum Lobbianum is in common practice around Boston. A small flower bed, 12 in. or 14 in. in diameter, is made at the top of a bank or on the sunny slope of a lawn, and planted with these fiery Nasturtiums. As they advance in growth, the shoots covered with scarlet blossoms reach forth in all directions among the Grass. The Grass is not mowed, but merely switched over with the sickle, when it overtops the Nasturtiums Such brilliantly studded banks attract considerable attention.—"Rural New Yorker."

Cannas with Gladioli.—One of the specialities of the Paris flower markets from the middle of July onwards is a combination of Cannas and Gladioli in pots. A strong clump of a bronzy-leaved Canna is potted with one or two bulbs of Gladioli, the variety Brenchleyensis being the favourite. The pots are brought to the markets in considerable numbers and look remarkably well, the ample leafage of the Cannas setting off the scarlet flowers to great advantage. Occasionally we see in the same pot the bold leaves and striking flowers of the Canna with those of the Gladiolus; but, generally speaking, the flowers of the Canna are pinched out before they open.—"Gardeners' Magazine."

GARDENING FOR THE WEEK.

Orchids.

The most generally useful of all Orchids are those that, in addition to their flowers lasting long on the plant or in a cut state, are sufficiently plentiful, moderate in cost, and easy of cultivation to admit of their being grown in quantities so as to enable the cultivator to bring them into bloom in succession.

Dendrobium moniliforme and D. nobile.—Amongst Dendrobes bearing the above character, one of the first in the year that has a tendency to come into bloom is the Chinese species, D. moniliforme. If several plants of this are grown, and some are at once put into a brisk heat, their buds, which are now prominent, will soon expand; they will admit of more water being given to the roots in the first stages of development than the nearly allied species D. nobile, as D. moniliforme has not a disposition to produce growth from the nodes if kept comparatively moist at the root in the early stages of the flower advancement, as is the case with D. nobile. By keeping some of the plants cooler, that is, a few degrees warmer than the temperature of an ordinary greenhouse, they will succeed the earliest in bloom. If some plants of D. nobile are put similarly into a warm house, they will come on to succeed, as well as give contrast, to the first-named sort, but with these, as already intimated, no water at all should be given to the roots until the flowers are distinctly discernible. Where there is a moderate amount of atmospheric moisture it will suffice to enable the plants to make the requisite progress.

Cœlogyne cristata.—If there be a sufficient stock of Cœlogyne cristata, some of the plants should be put in warmer quarters, to hasten the expansion of the already advancing flower stems. This is a subject that requires an abundant supply of water at the roots, but at this time of the year, instead of giving it with the syringe, I have found it best to apply it with a spouted can; in this way, with care, it will not lodge on the bloom spikes, which are liable to damp off if moisture accumulates about them.

Lycaste Skinneri.—From this useful and easily-grown species a longer succession of flowers may be obtained, if a few of the plants are likewise placed where they will be a little warmer than the rest. Such Orchids as are in flower, especially in the East Indian or warmest compartment, should be put where they are the least likely to suffer by the condensation of moisture upon them; this will be generally found at a distance from the extreme ends or sides of the house; for the same reason no more moisture ought to be used in the atmosphere than is absolutely necessary for the well-being of those plants that are making growth.

Material for Growing Orchids in.—The peculiar nature of most Orchids is such that the material in which it is necessary to grow them artificially is very different from that required by the majority of other plants; most of them grow naturally with their roots in a great measure exposed to the air on trees or slightly-covered rocks to which they cling, with the extremities extending to the light, and decomposed vegetable matter is generally to be found within their reach; it follows, therefore, that if potted in soil at all adhesive, they very soon perish, though, on the other hand, the extremely light potting practised by some growers is not calculated to produce, nor does it actually result in, such strength of growth and flowering abilities, with a disposition to increase, as where more or less peat is employed. A sufficient quantity of peat, Sphagnum, and turfy loam for such as want it should always be got in before the close of the year to last for the next six months.

Sphagnum.—In the case of Sphagnum, with those who reside in localities where it grows, and can procure it for the trouble of collecting, enough for twelve months should be secured, as, when severe and protracted frost occurs, I have seen it so far killed, or injured, as to reduce it to a slimy mass, totally unfit for placing near the roots of any living plant. When it is got in, it is advisable to pick out all dead leaves or particles of Grass that frequently are found amongst it, and which, if used in a living state, grow in the pots and take a good deal of trouble to eradicate; and if the Grass be killed by the Moss being dried before use, as soon as it gets wet it produces mould, which, if it does no direct injury to the plants, quickens the decomposition of the material, rendering it sooner an unfit medium for the roots to penetrate. The best plan that I have found with Sphagnum is to spread it out thinly on a boarded floor, if available, and to keep it turned till it is quite dry.

Peat.—Even for the commonest Orchid, nothing but the best fibrous peat should be used. Such as is of a brown colour obtained from a dry situation occupied by the common Brake (Fern.) is the best, as the fibrous roots of the Fern permeate the peat so as to make it nothing but a mass of fibre; this, with the more earthy part shaken out, and the thick portion of fleshy roots of the Fern removed, is in my opinion the only description of peat fit for Orchids. The hard, black, close peat, on which Heather grows, sometimes used, is anything but suitable. The majority of Orchid growers are not so situated as to have good Orchid peat in their own immediate neighbourhood, as in comparatively few parts of the kingdom is this to be found. When purchasing, it is much more satisfactory to obtain it by the yard than by the ton, as, in the former case, it is immaterial to both buyer and seller whether it is wet or comparatively dry.

Storage of Peat.—Good Orchid peat being dear, it is often, with a view to economising it, kept until required under cover, where it is perfectly dry. This I have found to be a mistake, as it does not go near so far, by reason that when broken into bits, more of the earthy matter becomes detached than is absolutely necessary to take away, and the fibre that has once been thoroughly dried in this way sooner decomposes than when it has been kept all along in a slightly moist condition. It is better stacked out-of-doors, like other potting soils, in a manner that will throw the greater portion of the wet off, only taking it in sufficiently long before it is required, to admit of its getting into a sort of half-dry condition.

Loam.—There are a few plants such as Cypripedium insigne, Phajus, the larger-growing Zygopetalums, and some others of a like character, I have found to do better in loam than peat. A sufficient quantity of this of a not too sandy description should also be procured and stored as directed for peat.

Wood for Blocks and Baskets.—For such plants as are to be grown suspended from the roof, the superiority of baskets over pots is their being so much lighter, that where used in large quantities they do not put near so great a strain on the roof timber of the house, as well as the fact that they have a much better appearance; but whatever is chosen it is of the first importance that it be of the most durable character obtainable. The branches of Maple, Acacia, and similar wood look very well, but they are soon rotten, the result of which is that the wood gets so far decomposed as to necessitate the plants being moved from it, by which their roots, which in many cases will have absolutely entered the rotten material, are, unavoidably, to a considerable extent, destroyed in the removal. Cork, in common with all other bark, is a material that the roots freely cling to, but it is alike open to a similar objection on account of its soon becoming as rotten as the wood. The best material I have ever found for use in the shape of blocks, or wherewith to make baskets, is fossil or Bog Oak, which will last very much longer than any other description of wood, with the additional advantage that its decay is gradual from the outer surface, much in the manner in which a piece of iron rusts away, and not the whole mass together, as in the case of other wood, hence the roots do not get absolutely into it. The next best material that I have met with is the heart of English Oak, quite dry before being used, cut up into lengths proportionate to the size of the baskets or blocks required, and split, not sawn, to the thickness wanted. In this way it has a much better appearance than the straight-sawn surface. In making the baskets and blocks, a sufficient quantity of which should now be prepared, copper is preferable to the galvanised wire often used, which always rusts where the outer metallic coating is displaced in bending it. For draining the baskets, as also for mixing with the potting soil, charcoal, on account of its lightness, is much better than crocks. If all such materials are now got ready, when the time for potting the principal portion—towards the latter end of winter—has arrived, it will be found that the work can be got on with very much quicker than where everything has to be prepared as it is required.—T. Baines.

Indoor Plant Department.

Forced Flowers.—There is no season of the year wherein flowers are so deservedly prized as during the ensuing three months, when, if we except the Christmas Rose, the naked-flowered Jasmine, Laurustinus, and Snowdrops, there is little out of doors, in the way of flowers, to interest us. In glass structures, that are kept at an ordinary greenhouse temperature, Camellias, Primulas, Cyclamens, Mignonette, early sown Cinerarias, and similar plants can be had in blossom; but, in the case of those who require a good and regular supply, a house wherein a night temperature of from 60° to 65° is maintained, is indispensable. It is not necessary that such a house should be either very large or costly; but in order to be able to reap full benefit from it, as regards the production of winter flowers, it should be divided by a glass partition, so as to keep one part cooler than the other. By this simple arrangement, there is no necessity for keeping some plants warmer than they require, and others cooler than they can well bear. In the coolest division, where a night temperature of from 50° to 55° can be kept up, bulbs, such as Hyacinths, Narcissus, and Early Van Thol Tulips, may be brought on into flower much more satisfactorily than in a stronger heat. Of that very best of all shrubs for forcing, Deutzia gracilis, plants that have been forced before, and that have made their growth afterwards in a little warmth, will flower earlier than they otherwise would do, and with less application of heat. The double-flowered Plum also forces well under similar treatment to that of the Deutzia; both will succeed better in the cooler stove temperature above-mentioned than if subjected to more heat, and the same remark also applies to Azaleas. The double A. Borsig, Reine de Portugal, and Flag of Truce, last in a cut state much longer than the single varieties, and, therefore, deserve to be generally cultivated by all who require forced flowers. In bringing all such plants into bloom in heat, the atmosphere should not be kept too moist, just enough water being used to maintain it in a genial healthy condition; neither should the plants be syringed over-head too often; once a-day, and that in the afternoon, is enough, for if too moist or hot, the flowers of all forced plants will not last nearly so long as those brought on slower. The plants should also from the time they are placed in the heat, be as near the light as possible. By this means the colour and substance of the flowers will be much improved, and, if required for cutting, will keep much better. In the warmer stove should be placed successional plants of Poinsettia, Euphorbia jacquiniæflora and E. splendens, Plumbago rosea, Sericographis Ghiesbreghtiana, Gesnera exoniensis and G. zebrina. The two last, when well managed, are amongst the best winter-flowering plants grown; all the above are suitable for cultivation in small houses, where larger-growing plants could not be so well accommodated.

Indoor Fruit Department.

Vines.—Late Vines have now, for the most part, lost their foliage and, therefore, the fruit which may still be hanging on the plants is not so liable to decay as it was some time ago. The air, however, about them should still be kept as dry as circumstances will permit. The temperature should never be permitted to exceed 40° at any time with fire-heat, or the berries will be likely to shrivel and lose their plump appearanc. Muscats are amongst the first to shrink, probably owing to their often being not quite so well matured as most other varieties. The bunches which contract most should, in all cases, be used first. Fire-heat should not be employed for their preservation, unless it be to exclude frost or at times expel damp.

Pines.—The earliest batch of Queens must be started now to fruit during the early part of May. If the whole of those first rested are too numerous to begin with, those most likely to fruit first should be selected. This state is generally indicated by the leaves being widely spread out from the centre, and the stem around which the leaves cling being very robust; plants of this description may usually be depended on. Those selected should be taken from where they are at present and have their leaves tied up, previous to the removal of a few of the lowermost ones, and all the loose soil down to the roots. This exposes part of the stem, and it will be seen that many small roots will be emitted from it. Against these a quantity of fresh loam and bones should be firmly pressed, leaving not less than 1 in. empty below the rim of the pot, that watering may be easily effected. The young roots soon take possession of the new material, and the plants derive the benefit of it when they come into fruit. After adding a quantity of fresh plunging matter, and mixing it well up with the old, the plants should be plunged 2 ft. or 3 ft. apart, and the leaves let down into the position which they occupied previous to being tied up. It will be a few days before the heat rises about the pots, and until this time no water should be given at the root. As soon as the heat rises to 80°, give a thorough watering with water heated to 85°. Do not let the heat ascend above 80° for the first fortnight. The air heat should be about 65° at night and 70° throughout the day, with fire-heat, and 80° with that of the sun. The atmosphere must constantly be kept moist; on sunny days they may be lightly sprinkled overhead with the syringe early in the afternoon. Do not open any of the ventilators until the temperature rises to 85°.—J. Muir.

Hardy Fruit.

Pruning Fruit Trees.—It is always advisable to get the pruning of all fruit trees, except Peaches, Nectarines, and Apricots, completed as soon after the leaves are off as possible. When pruning is finished before the close of the year, time is given for the performance of other operations as they become due. Pruning at this season is certainly cold work, but it will be much more so if deferred until winter is far advanced, when there may be frost and snow, and when the work cannot be done so well as when it is carried out with comfort to the operator. Those who have not had much practice in pruning are very liable to either overdo or underdo it. In the case of bush or pyramidal Apples and Pears grown on borders of limited-sized gardens, it is generally deemed advisable to confine them to a small or medium size, and in order to accomplish this, they are often so severely cut as to defeat the object in view, especially when the trees are young and disposed to make strong growth. In order to check too great a luxuriance of growth, those trees that are in the condition just mentioned and that were root-pruned about the end of the summer, should not be more closely pruned than will be effected by a slight shortening of the strong shoots requisite for the necessary furnishing of the tree, while those shoots that tend to overcrowd and are in the worst position should be entirely removed. Thus treated, it will be found that the root-pruning, if sufficiently and judiciously carried out, will have the effect of reducing the next summer's production of wood to not more than one-fifth of what it has previously been, in place of which the energies of the trees will be directed to the formation of quantities of fruit-bearing spurs on the shoots that have been made this and the preceding season, whereas if too much of the young wood be cut away, the full effects to be derived from the root-pruning will be rendered nugatory. Pears on the Quince stock do not make so much wood, and consequently do not require so much pruning, either roots or branches, as those grown on Pear stocks, but the fruit of many varieties is frequently not so good in quality, particularly such kinds as are at all disposed to be gritty. Apples, also, on Paradise stocks, will not need pruning nearly so much as when grafted on the Crab. I mention this merely for the guidance of those who are inexperienced, and who frequently cut away at every tree upon which they operate without discrimination, as if the impression existed that the fruit-bearing capabilities of a tree depended upon pruning alone, whereas pruning is only one of the means employed to induce fertility, and requires to be varied in extent according to the state of each individual tree. It is simply useless attempting to get fruit from a young tree that produces quantities of young wood by persistently cutting out the shoots at the winter pruning; the effect of this is to cause similar growth the following season. In the case of large standard trees do not overprune; on the contrary, only just thin out the weak, inner branches, so as to admit a reasonable amount of light, and allow space sufficient to prevent one branch coming in contact with the other during high winds, and thus knock off the fruit. It is no unusual occurrence for an inexperienced pruner to use the saw so freely in the case of standard trees as seriously to reduce their bearing capabilities. In small gardens, where trees of good varieties of Apples exist that are too large for the places which they occupy, or when they unduly shade the vegetable crops that have to be grown near them, rather than remove them altogether, it is frequently more desirable to head them down to within 2 ft. or 3 ft. of the ground. Soon afterwards they form moderate-sized, fruitful heads, certainly not so trim in appearance as those of young dwarf trees, but very often of much more service in filling the fruit room. Plums and Cherries, unless in damp, over-rich soil, are not usually disposed to make such rank, unfruitful growth as Pears and Apples; they, therefore, simply need their shoots regulated by cutting back any that take an undue lead and thinning out all that are not wanted to form symmetrical heads. With young Pears on walls there is frequently too much haste displayed in covering the space allotted to them, by laying in the shoots indiscriminately their whole length, instead of shortening such as require it to furnish a sufficient number to cover the wall evenly; the result of this is a waste of space and an unsightly appearance ever afterwards, with the generally additional disadvantage that a considerable portion of the base of the trees contain no bearing wood at all. In the case of young trees of this description any shoots that show a decided tendency to outgrow the rest should be cut sufficiently close to induce them to break back where additional growths are required to cover the wall; this will tend to equalise the strength by throwing more vigour into the weaker shoots. The same holds good with Cherries and Plums on walls.

Pruning Bush Fruits.—In respect to Gooseberries and Currants, advice is often given not to prune them until the winter is far advanced, so that if birds attack the buds the pruning can be afterwards so regulated as to leave the shoots on which the buds are least destroyed. A little reflection will show this to be a mistake, as in localities where sparrows and finches abound, if the trees be left to themselves, they frequently clear off the whole of the buds; and even where a portion is left, it is often on such shoots as are misplaced, and which, to preserve a shapely bush, have to be cut out. Besides, in advocating such a course of treatment the fact is lost sight of, that when buds are stripped off, especially in the case of Currants, it is not the ensuing year's crop alone that is destroyed, but also the spurs that should push for a number of years. It is much better to prune these fruits at once, and, where necessary, to take such means as will deter the birds from attacking the buds or render the latter distasteful to them. In pruning young Gooseberries, little more requires to be done than cutting out the superabundant shoots, leaving those that are best placed to form the future bushes, so as to give them a shapely appearance. In the case of those as have attained sufficient size, a portion of the old wood should be cut out each year, leaving young shoots to take its place, and selecting, as far as possible, those that spring from near the base, so as to keep the bushes furnished properly down to the bottom. Never leave the centres of the bushes crowded, or the fruit will be deficient in both size and flavour, and avoid, however, the extreme of reducing the bushes to mere skeletons in the way practised by those who grow this fruit for exhibition, where everything is sacrificed to the production of a very limited quantity of large-sized berries. Red and White Currants only need the branches to be reduced so as to leave sufficient space without crowding. Immediately the pruning is completed, a few white threads should be run loosely over the bushes in the usual way. These, while they retain their fresh colour, will generally be found effective in scaring sparrows, but not finches; to preserve the buds from being eaten by the latter, mix lime and soot in equal quantities with water, as thick as it will pass through a syringe with a coarse rose; or it may be sprinkled on with an ordinary hand-brush. A fine sunny day, when there is enough wind to dry the mixture on thoroughly before night, should be chosen for the operation, and if that be done it will stick for a good portion of the winter in quantity sufficient to make the buds unpalatable to these feathered depredators; a second dressing of the mixture should be given after the first has become inefficient; but whether the thread or the soot and lime be used, the bushes should be looked over at intervals to see that the means employed are effectual, as there is nothing more annoying than to find the season's crop destroyed as well as injury inflicted for a longer period. Black Currants require much less wood being cut out of them than the Red and White kinds; all that is required is to thin out the growths so as to prevent their getting too close, and in the case of old trees to cut a few of the branches out near the bottom each year, which will induce them to push up young shoots that will keep the bushes renewed, and to shorten the whole so as to keep them within bounds as to size. Raspberries may also be pruned at any time after the leaves are off; the number of shoots that should be retained to each stool will depend upon the age and strength of the plants, say from one or two to such as have only been a year planted, and six or eight to those that have got to full maturity, and that are strong; the length at which the shoots should be left will also depend on their strength and the method upon which they are grown; the old-fashioned practice of tying half the shoots from one stool to an equal number of another in the form of an arch with a stake driven into the ground where the bent shoots meet to which they can be fastened, has its advantages in the bearing shoots trained in this way not interfering in any way with, or being shaded by, the young growth, but grown in this way they have not such an orderly look as when the shoots are tied to wires stretched from end to end of the rows; under the latter method the shoots should not be left so long, as from their being in an upright position the lowest eyes do not usually break so well. In very many gardens there are portions of low wall unsuited for growing such fruits as require considerable space; these usually have Currants planted and trained over them; it is much better to cover part of such walls with Gooseberries, as they give variety, and in such a position they will keep for weeks when ripe, as here they are little exposed to wet and can be easily protected from birds with nets. On east or even north walls Gooseberries, as a rule, will bear well, whereas on these aspects the space is often under ordinary circumstances lost under the impression that nothing will succeed.

Kitchen Garden.

Forcing Seakale.—Where Seakale is required for use early in the ensuing month, means should at once be taken for applying heat to the roots. There are two methods by which it may be forced, viz., either by placing over the crowns, where they grow, the ordinary pots employed for the purpose, and covering them up with fermenting materials, such as leaves, fresh stable manure, or a mixture of both, or by lifting the roots and forcing them elsewhere. Where leaves can be had in sufficient quantities, these are much to be preferred to all other material, as they afford a more gentle warmth, and are not liable to get too hot, or impart a disagreeable flavour to the Kale. In forcing under pots, the whole space between them should be filled up with fermenting matter, covering the lid with which they are provided to the depth of a few inches. When the whole is complete, two or three sticks, to test the heat, should be inserted in the heating material. These ought to be frequently examined, to see that it does not get too hot, in which case the produce is forced up too quickly, which makes it thin and weak, instead of having the short, thick crowns of which well-managed Seakale consists. If the sticks feel a little warm, it is sufficient to produce Kale of 8 in. or 9 in. in length in five weeks or so from the time the material has begun to ferment. Should there be any indication of too much heat, some of the fermenting material ought to be removed from the tops of the pots, so as to cool it. By this method of growing Seakale, the same roots will bear forcing in the beds in which they are grown for years, without replanting; but the produce is not usually so fine as when the roots are taken up and placed on a bed of leaves or other fermenting matter. For this reason, and the fact that much more can be grown on a given space—consequent upon the closer planting which the latter system admits of—it is to be preferred. Where the roots were planted as advised in spring, they will now be in a condition for taking up; and it is best to at once lift all that are likely to be required for the season, selecting the strongest crowns for forcing. Those not wanted for immediate use should be heeled in in a few inches of soil or ashes, in any place out of the reach of frost. At the time of taking up, the weakest crowns, and all the whip-thong-like pieces of roots should be placed by themselves in a little moist soil, where they will not get frozen, and be kept for replanting in spring. A bed of leaves, about 2 ft. thick, will be enough, made up so as to place on the top of it a small garden frame, or large box of any kind. In it put 10 in. of ordinary soil, and in this plant the crowns about 3 in. apart each way. On the top of the frame, or box, place a lid or shutter, and cover up the sides and top, so as to keep in warmth, and totally exclude light. By this means, Seakale can be grown in perfection. Where there is a Mushroom-house at work, the crowns may be placed in it; but, here again, especially when a considerable body of fermenting stable manure exists, the flavour is not nearly so good as when it is grown on a bed of leaves.

Rhubarb.—Where Rhubarb is required early some roots should at once be placed in a gentle heat. They may be forced like Seakale where they grow, except that much deeper pots must be used; but, in the case of Rhubarb, as well as in that of Seakale, it is preferable to take up the roots and place them in heat. Nothing is better than a slight bed of leaves on which to put them, protected by a deep temporary frame or box, covered up so as to keep in the warmth and exclude light. The roots should have a few inches of soil placed under and also between them. For the first produce some early kind, such as Linnæus, Tobolsk, or Prince Albert, should be selected, as these will come in much sooner than the later sorts. If a few roots of the Victoria, which is a later kind, but large and very productive, are at the same time put under the stage in a greenhouse, or in any similar out-of-the-way place that is kept a little warmer than the external temperature, they will come on in succession; but, in such a situation, they should be covered up to exclude light, and, in all cases, the soil that is placed round the roots should be watered as required so as to keep it a little moist.

Extracts from my Diary.

December 16.—Examining Cucumbers, stopping them where required, and picking off all useless blossoms. Making a new border for Roses 18 in. deep, and filling it with good loam and manure. Looking over Cauliflower plants, picking off all decayed leaves, and stirring the soil amongst them.

Dec. 17.—Getting into spare frames a quantity of large Endive for protection. Turning over Mushroom manure to sweeten. Covering up part of another Seakale bed. Getting manure wheeled on to the land whilst the weather is favourable, and mending Box edgings in the kitchen garden.

Dec. 18.—Getting up another lot of Snow's Winter White Broccoli and putting them in spare cold pits. Putting more Asparagus in frames and renovating the linings. Staking and tying some newly-planted trees and shrubs. Cleaning the walks and Grass in pleasure grounds. Looking over the Grape room, removing bad berries, and filling up the bottles with water where required.

Dec. 19.—Sowing Mustard and Cress and getting in another batch of French Beans. Covering up Endive and Lettuces to blanch. Lifting and root-pruning some dwarf-trained Plum trees that were growing too grossly. Rolling down all gravel walks firmly, also all the Grass when the weather will permit.

Dec. 20.—Getting into the forcing pit some more Lily of the Valley and Deutzia gracilis. Proceeding with the pruning of large deciduous trees. Clearing off all decayed vegetables and prunings and burning them. Getting into the Mushroom house a little more Chicory and Dandelion to force.

Dec. 21.—Looking over Pelargoniums, stopping them, and picking off dead leaves; examining Pines and watering any that require it. Looking over the fruit room, and removing any fruits that are decaying. Fruits in use for dessert:—Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

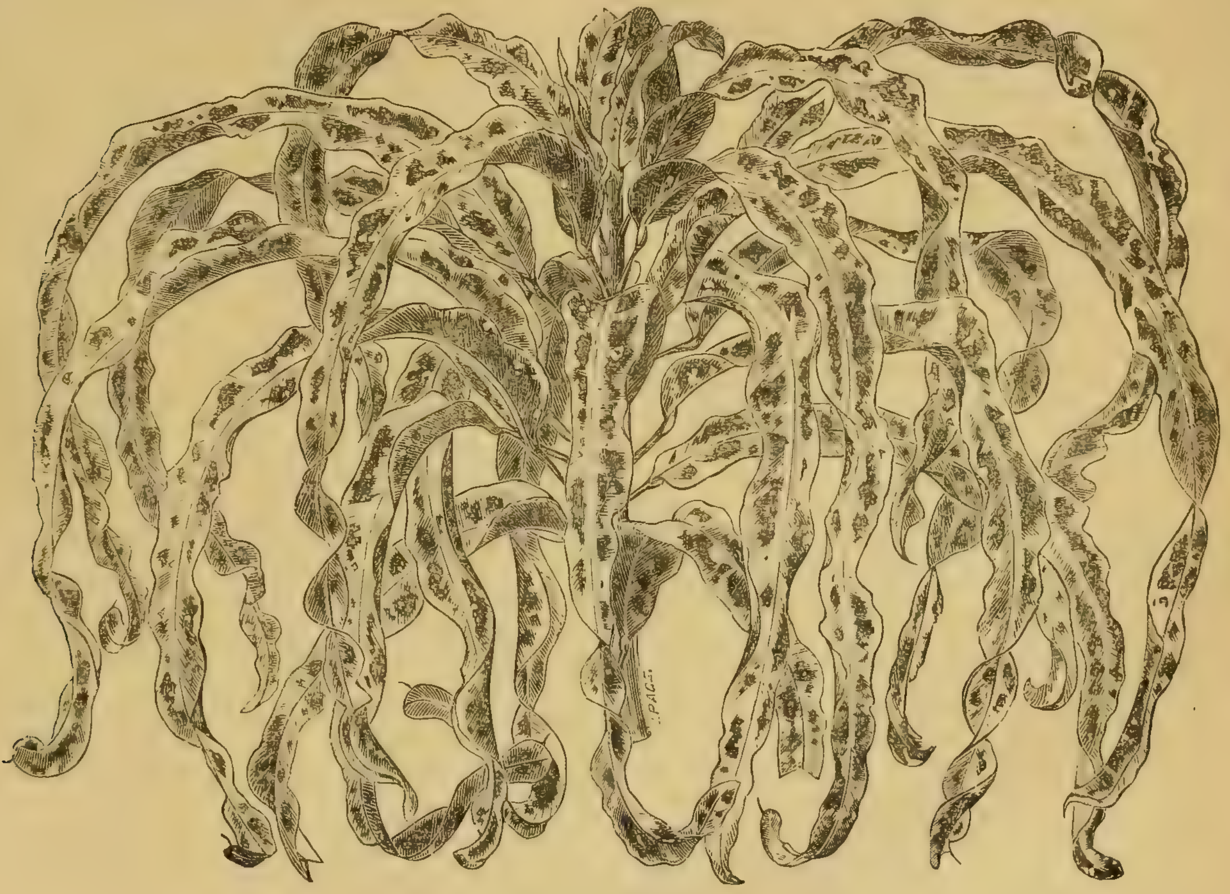
THE INDOOR GARDEN.

WINTER FLOWERING BOUVARDIAS.

Cambrian," and several others who have written on this subject, make the mistake of implying that because these plants will produce some flowers during winter in a greenhouse temperature, or something a little over this, that it is wrong to grow them warmer. That Bouvardias would bloom at this season with ordinary greenhouse warmth, I had already learned by subjecting them to such treatment, and this many years before the majority of those who now grow them in all probability knew the plants were in existence; but, so managed, I found that they produced little flower beyond that which was formed on the plants in the autumn, when they were taken in from the cold frames. To argue that, because they will produce a certain quantity of flowers under this treatment, it is wrong in practice to subject them to a higher temperature, by which, as I have learned in practice, they will keep on quickly and continuously through the winter, making short growths and flowers from the axils of the leaves of four or five joints on the shoots below the top, where the first bunches are produced, is just as inconsistent as it would be to try to make it appear, that because many of the other plants which we force in a more or less high temperature through the winter, would flower to a certain extent without this, the extra heat was wrong that enables those who subject them to it to get two or three times the quantity of bloom in a given time from a given number of plants, that they will furnish under cool treatment. What I wrote on the cultivation of Bouvardias for winter flowers, was simply a short detail of the method that I had found best calculated to produce the greatest quantity of flowers from the smallest number of plants, a desideratum that most private growers find it worth while to take into consideration, and had nothing to do either for or against the practice of those who have not the convenience or inclination to grow them warmer, and consequently are content with a slower and smaller return.

T. Baines.

Croton Prince of Wales.—This graceful and richly-coloured species, introduced from the South Sea Islands by Mr. Williams, of the Victoria Nurseries, Holloway, is one of the handsomest and most distinct of the narrow-leaved Crotons, and one which will form a beautiful object either for the decoration of the dinner-table or as a specimen plant. It is of a free branching habit; the leaves are pendulous, arching, and slightly twisted; some of them even present a complete spiral form, ending in a small pointed elongation of the mid-rib, the edges of the leaves being always beautifully undulated. The colour of the leaf is almost entirely pale yellow, margined and mottled with bright carmine, with occasional irregular blotches of pale green, the mid-rib and petiole being bright magenta. It has been shown on several occasions this year in excellent condition, has always attracted much attention.—S.



Croton Prince of Wales.

CULTURE OF ORCHIDS IN BASKETS.

It has often been a matter of surprise to me that baskets should not be more extensively employed than they are in Orchid culture. One of the most important points connected with their cultivation is insuring to them at all times an effective drainage. The basket, to my mind, better enables the grower to guard against excess of, or stagnant moisture at the root than any other receptacle which can be employed for them. Well as pots may be drained, they yet necessarily lack that free outlet for superabundant moisture which is characteristic of the basket. For beginners especially I feel convinced that this method of culture is particularly recommendable, inasmuch as with them the great difficulty is to regulate the amount of water, to give enough and yet not overstep the mark. Had I any new, rare, or difficult species to deal with, I would certainly put it in a basket, and I should feel more confidence in its doing well than if it were potted. I once took under my care a collection of Orchids which had been sadly neglected, they having scarcely any root left to them. Some I potted and some were set up in baskets; the latter made by far the most satisfactory progress, making a free and healthy growth. Some of the finest Vandas and Cattleyas I ever saw were from the establishment of the Duke d'Ayen, near Paris. Vanda suavis was 6 ft. high, foliaged to the bottom, clean, healthy, and vigorous; Cattleya Skinneri, had nearly 400 expanded blossoms on it. There were two plants of this species equally well bloomed and in every way admirable examples of successful culture. With these were also Zygopetalum Mackayi and Miltonias of proportionately large dimensions and manifesting the same exuberance of bloom. These plants were, without exception, in baskets, having never been grown in pots. Another large collection of Vandas, Cattleyas, Saccolabiums, &c., was grown exclusively in baskets, and the specimens generally were some of the largest and healthiest I ever saw. On complimenting the person in charge, he said, "This is the first and only collection of Orchids I ever had to cultivate. When my employer first took a fancy to Orchids, and placed his first acquisitions in my care, I told him frankly that I knew absolutely nothing of their culture. He, however, procured some baskets and Sphagnum, and I arranged them to the best of my ability, using nothing but a little charcoal with the Sphagnum. There (pointing out some large specimens) are the identical plants. Seeing that they grew, others were procured, and I treated them the same, and, really, I have never had any difficulty. I can see how they are when the basket of any one of them rots, or a plant needs a shift, and I scarcely ever interfere until the basket gives way; I just drop it into another basket, ram in some Sphagnum and a little turfy peat and charcoal, and the job is done. My friends say that Orchid growing is difficult. I have not taken a great amount of pains, and really do not find it so. As to watering, I am not at all particular; in hot weather I moisten them thoroughly with a rosed pot, and they enjoy it." Now, I ask, would these results have been attained if pots had been employed? Scarcely, I think; half the plants would probably have died, and the remainder have made but small progress in the hands of such an inexperienced person. Pots look well, and the plants as a Frenchman would say, "present themselves better" in a new or well-washed pot; and, for trade purposes, appearance goes a long way; but the amateur need not let such considerations influence him; his object is to grow his plants so that they will repay him by a healthy growth and abundance of bloom, and this, I believe, is more easily obtained by the employment of baskets than by using pots.

Byfleet. J. Cornhill.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Casuarina sumatrina as a Large Specimen.—This plant is often grown for table decoration, but it is seldom seen in the form of a large specimen. In such a state, however, it forms one of the most ornamental occupants of the stove or warm greenhouse at this season of the year, its graceful, thread-like, deep green foliage being shown off to good advantage among finely-coloured Crotons, Dracænas, &c. Thus circumstanced I found a fine plant of it—6 ft. high and as much through—in Messrs. Carters' nursery, at Forest Hill.—S.

Selaginellas for Table Decoration.—Like Mr. Groom, I find these Club Mosses most useful for dinner-table decoration, especially in winter, when few cut flowers can be had. When I came here, I found a good supply of them in pots, and when required they had to be turned out and broken up to fit into certain stands—an operation which somewhat spoiled their appearance. I, therefore, tried growing them in flats of different sizes that would fit into the vases which they were afterwards intended to ornament. I bored a hole in the bottom of each flat, filled it with soil, raising it a little in the centre, and dibbled small pieces of Selaginella all over it; they soon formed dense little mounds, which we placed on other flats full of water. This enabled the Moss to hang down all round, and obviated the giving of so much water on the top. When required, we place each in its respective stand at once. We keep up a succession of them, and, whenever one lot assumes a brown or withered appearance, we cast them away and supply their places with fresh plants. Small flats require a little care at first, as, on account of their holding little soil, it might easily be washed out in watering. Such a system as this is attended with the best results.—S. K., *Templepatrick.*

Adiantum Farleyense on Water Tanks.—Though liable, when syringed overhead, to be affected by damp on account of the tenderness and the dense character of its pinnæ, this Fern succeeds well when placed on inverted pots in a water tank so that the bottom of the pot on which the plant is growing is just above the level of the water. In this way we find fine healthy plants of this Fern 3 ft. through in Messrs. Osborn's nursery at Fulham, where also Anthuriums thrive well under the same conditions.—S.

Indian Azaleas Planted Out.—Where large collections of Azaleas exist in private gardens, it is generally the practice to place them out-of-doors in summer under the shade of trees and in similar positions. A much better way, however, is to plant them out in prepared beds of soil in an open, sunny position. Thus situated, if they receive plenty of water at the roots, they will assume a much greener and healthier appearance, and will flower better than those kept in pots. Azaleas are thus treated in Messrs. Rollisson's nursery at Tooting, both large and small specimens, and, at the present time, their health, vigour, and quantity of flower buds are all that could be desired.

Training and Tying-out Specimen Plants.—This is the most favourable time of the year for looking through and putting into shape the general stock of Azaleas, Heaths, and New Holland plants. In fact, this description of work should be completed by the middle of next month, before the lengthening days, and consequent increase of work, arrive. Old, straggling specimens may now, with a little time and patience, be brought into a shapely condition. It does not, however, follow that every little branch and twig should be closely tied in so as to entirely destroy the natural habit of the plant. Training is now admitted by many good growers to have been overdone, and good taste tells us that, whilst we should so train and restrict a plant that it may be better adapted to our requirements, we should not wholly obliterate that irregularity of outline which is one of Nature's greatest charms.—J. Cornhill.

Burnt Earth for Potting.—In many parts of Germany burnt earth is much employed for horticulture. It there often usurps the place of loam, the use of which is not generally so well known as in this country. The refuse of the garden—clay, rotten wood, lawn sweepings, &c.—is all thrown together and slowly burnt in the summer. Many kinds of plants root freely in soil thus prepared, and it is very serviceable for seed sowing, being free from weeds. It is the custom in most large establishments to annually burn a large quantity, as, even when merely employed to enrich the ordinary garden soil, it is credited with stronger renovating powers than rubbish applied in a decayed state.—J. C., *Byfleet.*

Exhibition Chrysanthemums.—I do not think that Mr. Williams (page 521) need fear creating many enemies by his vigorous onslaught on the "parterre-trained" exhibition Chrysanthemums, at least, amongst the readers of The Garden. The teachings of that paper have so far tended to a diverse view as to the merits of trained plants to those held by exhibitors, and generally in flavour of Mr. Williams' ideas, that I believe what he has written will be received with approbation. There are a few certain plants that are, when trained in the usual exhibition style, particularly obnoxious. These are the rigid pyramid Azalea, the flat flower-bed-like floral pancake seen in the zonal Pelargonium, and the formal, inverted, saucer-like Chrysanthemum. All of these plants display in their training most remarkable evidence of perverted ingenuity and industry. In no sense does either present its natural habit, the foliage is as much as possible kept out of sight, and the great effort of the grower is to bring into special and rigid prominence every bit of bloom. Judges seem to forget that plants should have leaves as well as flowers, and are taken only by the mass of bloom presented to the eye. Could not some prizes be offered for the best untrained examples of all the above plants, showing the natural growth with the most pleasing admixture of foliage and flowers? This would, indeed, be a step in the right direction. I observed at the late Ealing Autumn Show a mode of exhibiting cut Chrysanthemum blooms that I think would have gratified Mr. Williams. These were in threes of one sort cut on 9-in. stems with good foliage attached, and staged in flower pots filled with sand and Moss. This made a very pleasing class, and was by no means formal, as the flowers admitted of different degrees of elevation. A flat box of cut blooms is the most formal thing imaginable.—A. D.

THE FRUIT GARDEN.

FRUIT GROWING IN CALIFORNIA.

The sudden development of this coast as a great fruit-producing region is so surprising even to those in its midst, and will probably in the near future so affect the world's markets, that some facts concerning it cannot fail to interest your readers. When the Americans first came to California they found little wild fruit and no orchards, except those planted by the Spanish padres around all the old Missions. These orchards consisted chiefly of seedling Apples and Pears, of Olives and Figs, with usually a Vineyard of a sweet blue Grape known since as the Mission Grape. When the mining excitement of 1849 began, the inferior fruit from these old Mission orchards brought such enormous prices, from 25 cents to 50 cents being often paid for one Apple, that great efforts were made to plant young orchards. Fruit trees, costing from 4 to 5 dollars in the nursery, were brought from Oregon as early as 1851, and often carried on muleback for hundreds of miles over mountain trails to little mining camps. The first trees which came into bearing netted large sums, Peaches being sold for 1 dollar apiece, and Plums for 25 cents. In one instance, a small orchard consisting of three-year-old trees was condemned for mining purposes, and a jury of miners appraised the trees at 100 dollars apiece. Nurseries were soon started at various points near the Bay of San Francisco, and tree-planting went on with vigour. In 1855 or 1856 some of the mining camps began to decline, and the mountainous portion of the State was comparatively deserted. By 1860 fruit had so greatly declined in value, that old and formerly valuable orchards in the mining counties were totally neglected and left to run wild. Lack of transportation and an overcrowded home market were the chief causes of this neglect. Here was a remarkable state of affairs, which few were able to realise. This State, settled by pioneers in 1849, had actually, in less than a dozen years, become overstocked with orchards, so as to pass the limits of home consumption, and yet the great thermal fruit belt, adapted to Oranges, Grapes, &c., and extending for a length of 400 miles, with an average width of 30 miles, had only an orchard here and there, whilst a vast acreage of higher lands, fit for hardier fruits, was untouched and unclaimed. To many the limit of orchard planting had been passed, and in some cases young orchards were foolishly cut down. From 1860 to 1870 some railroads were built, which lessened the cost of transportation; fruit driers and canneries were established, and enough was done to convince people that dried and canned fruits would soon become a leading industry. Successful shipments were also made to the Eastern States, and have rapidly increased each year since. The planting of orchards began once more, and has gone on steadily. The old mining counties of Eldorado, Placer, Nevada, and others came to the front as fruit-producing counties, and will probably so remain. Since 1870 the fruit interests have yearly become greater. New varieties of fruit, patent driers, Apple parers, and labour-saving devices have occupied the public mind. There are a great many accidental seedlings, some of much promise. Our best autumn and winter Apples are White Winter Pearmain, Rhode Island Greening, Baldwin, Spitzenberg, Yellow Bellefleur, and Newtown Pippin. These average in price about 1 cent. per lb. The trees are healthy and yield enormously, so that they are profitable even at that price.

Clingstone Peaches are now considered better than Freestone for canning, and immense quantities are used. Late Peaches, also, and Apricots are greatly in demand. Only a few varieties of Plum, such as Coe's Golden Drop and Washington, are planted for drying, but Petite Prune d'Agen and Fellemberg are favourites. Of Pears, Bartlett, Winter Nelis, and Easter Beurré are the only ones worth shipping eastwards. Cherries have never been too abundant, but the price for them is each year becoming lower, reaching 6 cents and 8 cents per lb. last season. Small fruits are wonderfully prolific, and we can have Strawberries grown in the open air every month in the year.

Dried Figs and Raisins are every year of better quality. Many failures were made at first, but now our best Raisins, dried by the blower's process, are perfect in colour and flavour, and outsell Malagas in San Francisco. There is hardly any limit to our possible Raisin produce, and it is becoming a great industry. Dried Figs equal to the Smyrnas have never yet, to my knowledge, been produced on this coast, but tons of a second quality are made.

We have discovered within a few years that the Orange and other members of the Citrus family will thrive over more than three-fourths of the State, and in this direction also much interest is shown. The Dwarf Banana (Musa Cavendishi), of Florida, fruits here, and may already be seen in large fields; the Guava succeeds south of San Francisco; we are venturing, not without hopes, to raise Coffee; and our latest fruit is the Japanese Persimmon, or Diospyros Kaki, of which some 40,000 trees have, within two seasons, been disseminated, and some of the earlier importations are in bearing. The present prospect is in the highest degree encouraging for nurserymen, orchardists, and consumers. After our present Wheat era is done, our greatest wealth will remain in our Vines and trees. Indeed, our county fairs are already chiefly pomological displays, and exhibits of fine stock, rather than of grains or minerals. The variety of these displays is another marvel, eighty or ninety kinds of Apples often being exhibited, and sixty of Grapes. Our only enemies as yet have been the woolly aphis on Apple trees, and mildew on Grapes near the sea-coast, with an occasional borer; but none of these have been troublesome. An orchard here will come into full bearing in five years. Peaches often bear the third year from the bud.

Niles, Alameda, California. Charles H. Shinn.

THE CLIMATE OF THE NORTH OF FRANCE AND SOUTH OF ENGLAND.

Mr. Simpson's questions (p. 520) are very easily answered. The passages to which he alludes are the following:—

> No less important than the forest and ornamental trees were the fruit trees, particularly to France, in which the growth of hardy fruit for both home use and exportation has assumed such large proportions. . . . In England there are not a few who attribute the excellence of France in the culture of hardy fruit to the climate—the fact being that the climate of northern France is an extremely difficult one for the fruit grower, and, on the whole, not a whit better than that of Kent or Sussex. . . . There is no reason why we should not supply our own markets with the Pears we import from northern France and the Apples we import from the United States.

If Mr. Simpson had visited France in March instead of in August he would have had a very different idea of the climate. The difference between the climate of Paris and that of London is as well known to the many who pass between the two cities as the difference between the climate of Yorkshire and that of London. The question concerns hardy fruits, and anybody who holds that the climate of the south of England cannot produce these as well as that of north France, cannot know much of the climate of either. The summer heat of the south of England is ample for the development of the finest Apples and Pears, as all must know who are acquainted with good gardens in the south, or who have seen the Apples from Wrest Park and the Pears from such market gardens as those of Mr. Dancer, at Chiswick, and Mr. Wilmot, at Isleworth. I am merely defending the climate of the south of England, but could not a very good case be made from districts very much farther north? Did not Mr. Anderson, from Oxenford Castle, near Dalkeith, send a collection of Pears to London some years ago which carried off first prizes in competition with even the same kinds of fruit grown in the south of England? I have seen enormous standard Pears of Marie Louise in cold clays in Notts, and I have seen a very fine fruit garden at Stourton, near Knaresboro, under the management of Mr. Saul. The difficulties of saving the blossom in spring are quite as great in northern France as in England. It is not certain that the greater heat of Paris in summer is beneficial to many varieties of hardy fruits. It is probable that the south of England is a little more favourable to the Apple than the climate of Paris—at least with the exception of one or two kinds. I have not seen Apple orchards near Paris in a very good state, and yet our markets are filled with Apples both from France and America. The passages which excited Mr. Simpson's remarks were written with the view of encouraging hardy fruit culture at home, and of dispelling the common error in which Mr. Simpson seems to so fully share, viz., that the climate of the south of England is against the success of the culture of hardy fruits. It would be very easy to mention climates far worse than either it or the north of France where hardy fruits are grown to perfection. It would be also easy to name climates infinitely better than either in which the blossoms are seldom destroyed by cold, but they are very far away from us. In the remarks in question the English cultivator did not get blamed for his inferior hardy fruits, as Mr. Simpson states. One cannot, it would appear, point out one or two of the causes of our not being able to supply our own markets with a sufficiency of hardy fruits without this begging of the question. I was once talking about this question to Mr. Wood, an English nurseryman settled at Rouen, and he told me that for one fruit tree planted in England there were one thousand planted in France. We can call attention to such a fact as this without, it is to be hoped, blaming the cultivator. Mr. Simpson says:—"It is admitted on all hands that the past summer in England was an early one, and it is equally certain that the summer in France has been changeable and cool." This would seem to imply that he is not aware that the districts alluded to are under exactly the same climatic influences. A cool or a bad summer in the south of England is the same in the north of France. The question has mainly concerned Apples and Pears. With reference to Rivers' Early York Peach ripening on a wall in the middle of August, the Peaches are none the worse for being a little later. I have seen the Peach ripening as a standard, with Mr. Grieve, at Culford, and though such cases are not very much more to the point than Mr. Simpson's allusion to forcing Peaches in January, still I know from much observation on both sides of the channel that the climate of Southern England and Ireland is quite as good for wall-culture of Peaches as that of Northern France. In fact a good soil and a district not far from the sea in Southern England are conditions a little more favourable for Peach growing than the climate of Paris, provided, of course, the blossoms receive equal protection in both cases.

—— Allow me to inform "J. S. W." that the climate of northern France cannot be judged by that of Paris. In the neighbourhood of that town there are plenty of Vineyards; in Normandy there are none beyond Vernon. Grapes there, as here, can only be grown on walls, and even then they do not always ripen well. I resided some time in the neighbourhood of Rouen, and although the summer temperature may be somewhat higher than that with us, yet, with respect to the variability of the spring months and the severity of the winter, I found but little difference between that place and England. The growers there have to contend with spring frosts and hard weather, and I noticed, with some surprise, that the periods of heat, cold, rain, and drought corresponded pretty accurately with those experienced in this country; and yet from that region a vast amount of fruit generally flows into our markets. Why is this? Simply because their fruit culture is considered in the light of an important industry. Where one fruit tree is planted in this country twenty are planted in Normandy. Not only is this the case, but the knowledge of how to plant and care for a fruit tree is universal there, and that is one of the principal reasons why they have fruit to sell us. The question of superiority in this branch of gardening does not really rest upon the production of a little very fine fruit. We must take a broader view than that of it; we must rather look for that system which gives us a large supply of wholesome fruit, and in this respect the French are many years before us. J. Cornhill.

Byfleet.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Chaumontel Pears.—At the late autumn show of the Ealing, Acton, and Hanwell Horticultural Society, a basket of very fine Chaumontel Pears, shown by Mr. J. Hepper, gardener to C. O. Lidgard, Esq., The Elms, Acton, attracted much attention. They were gathered from a tree growing against an east wall on a gravelly subsoil—a tree that makes but little growth, but blooms and bears freely every year. To assist the tree, it is dressed with plenty of manure in winter and spring, and in summer, when the fruit is swelling off, constant supplies of liquid manure are given. The fruit has that rich, luscious, buttery flavour peculiar to this fine variety. Mr. Hepper states that when grown in this way this Pear is at its best during the month of December, and as a dessert fruit he does not care to keep it beyond that time. He thins his crop, but allows the fruits to be removed to hang as long as possible, and then they are sent into the house for stewing, thus making them take the place of the ordinary stewing Pears, which can in that way remain longer on the trees.—D.

The Best Kinds of Pine-apples.—I have this autumn had an opportunity of comparing the qualities of the following kinds of Pine-apples, all grown under precisely the same conditions, and I place them as to merit, in the following order, viz., Charlotte Rothschild, Black Jamaica, Prince Albert, Smooth Cayenne, Prickly Cayenne, and Black Prince; all were excellent, but the two first outdistanced the others by many points.—W. H.

Beurre Rance and Easter Beurre Pears.—These are two of the best Pears we have here, and as for Chaumontel we had fruit of it 19 ozs. the year before last; the trees are large and on the Pear stock and trained on an east wall. The Quince stock is not adapted for these sorts, and perhaps this accounts for the failure of these kinds in some gardens in the north. It is a well-known fact that the Quince stock destroys the flavour of many Pears; one especially, Vicar of Winkfield, becomes mealy, while on its own roots it is buttery and excellent in flavour. I believe in this country that the Quince stock has done as much harm as good.—H. Knight, *Floors.*

Pear Triomphe de Jodoigne.—This Pear has gained for itself a first position with me this season. Its bearing qualities are marvellous, for, during the last nine years, it has not once failed to produce a full crop, and, though it has always been good, it has often disappointed me by rotting at the core prematurely. This season, the weather being windy, the fruit was gathered, as I thought, too soon; but, as it has turned out, such was not the case, as not a single fruit has rotted at the core, nor is the fruit shrivelled in the least, and the quality is excellent. Thus, accidentally, I have learned a valuable lesson, viz, that Pears may be left too long on the trees as well as be gathered too soon.—W. Wildsmith.

Mulching Fruit Trees in Autumn.—I quite agree with all "W. N." says (p. 499) on this subject. A good many fruit growers appear to have a dread of the roots of their trees coming into contact with manure. This feeling seems to have been instilled into cultivators in their youth, and to have been accepted as sound doctrine—perhaps in a fuller sense than was always intended—without inquiry or experiment. All people know how difficult it is to get rid of preconceived notions that have been looked upon as truths, and no doubt this old view of manure being inimical to fruit trees has a modicum of truth in it, for it is not wise to bury manure much below the surface, but to feed them as Nature does and as your correspondent recommends, or only just beneath the surface. This is the true and rational way of manuring fruit trees.—E. Hobday.

Peach Pruning.—It is recommended (p. 494) never to shorten the bearing wood, that is, not to prune the current season's growth. Now, I believe it to be impossible for any one to form a good "year-after-year" fruit-bearing tree, unless the knife be judiciously applied to the previous summer's growth. If this be not attended to, the wood becomes weak and attenuated (as we too often witness), and, therefore, incapable of producing either good fruit or a satisfactory crop.—T. Cowburn, *Sunbury Park.*

Pear Van Mons. Leon Leclerc.—This is a kind that does well with us; it is not only a large, handsome, long Pear, but also one of good quality. It makes a fine addition to the dessert, and if grown on a south or west wall will generally be found to bear well. In less favourable positions it is valuable as a stewing Pear.—J. G.

Pitmaston Duchess Pear.—A dish of this splendid Pear was shown at the Town Hall, Birmingham, on November 27, by Mr. T. Stait, gardener to the Rev. Canon Evans, Solihull, and attracted much attention on account of its handsome appearance. As it is at its best in October and November, it comes in finely for exhibition purposes during the last-named month. At Preston Hall, near Maidstone, Mr. Breadley had it very fine this year, growing against a south wall, and praised it highly. This variety is said to be well adapted for growing as a pyramid or a bush tree, but not as a standard, as the fruit is too large. It is certainly a very fine exhibition Pear.—D.

Fastening Labels on Fruit Trees.—Whatever kind of label is used for naming trees, one fatal error should always be guarded against, and that is, tying the label on with wire round the main stems or principal branches, as, even if plenty of room be allowed for one or two seasons' growth, there is great danger of the wire being allowed to grow into the bark, and eventually strangling the branch. With wall trees, the best plan is to nail the label to the wall, just above the centre of the tree; and, in the case of standards, the label is more readily discernable if hung on one of the outer spurs or branches, where danger from injury is much less than in the central portions of the tree.—J. G.

PROPAGATING.

Coleuses.—These ornamental-leaved plants are easily increased in a warm greenhouse from cuttings made as shown in fig. 1.; loam, leaf-mould, and peat soil, with a little silver sand in it form a good compost for them. In a close propagating box they will emit roots in five or six days, but they do equally well without covering, if in a warm, humid atmosphere. They may also be increased by means of grafting, and in this way variously coloured sorts may be put on one plant. The branches may be cut as shown in fig. 2, and the scion as in fig. 3. Fit the latter neatly into the branch and tie with worsted; they will unite in a fortnight if kept rather close in the propagating box, or under a large bell-glass or cloche that can be lifted off when required, to allow superfluous moisture to escape. They want, however, a good deal of attention, as, being so soft and full of sap, they are liable to damp off.—H. H.

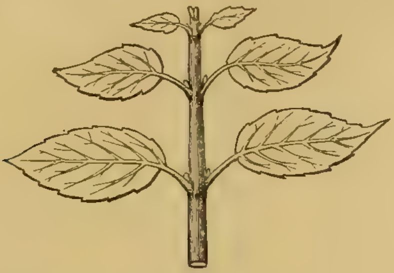


Fig. 1.

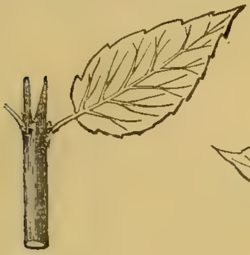


Fig. 2.

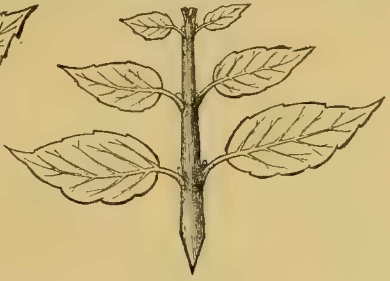
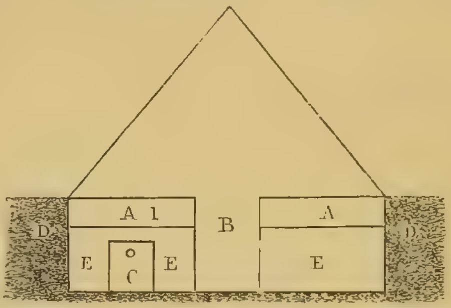


Fig. 3.

AN ECONOMICAL PROPAGATING HOUSE.

My friend, Alégatière, of Lyons, the celebrated grower and raiser of Perpetual Carnations, having seen the smoke of furnaces used for heating, thought of adapting it to his propagating house, and, after several years trial, he has arrived at the conclusion that it is the most efficient and most economical way of heating it. The structure is easier to build and less expensive than any other. It is excellent for early propagation, and, once established, it requires very little work to keep it in order, and the sand used, in which to insert the cuttings, does not, like tan or manure, encourage insects. The particulars of M. Alégatière's system I therefore append, thinking they may be interesting to the readers of The Garden. The pits, path, and fire-place are below the level of the ground. Of course there is a step leading to the path and fire-place, which place is covered, and can be used as a potting shed. The pit A is about 1 ft. deep; the space E, which is empty, about 2 ft. and about 3 ft. or 4 ft. in breadth. The pit A 1 is separated from the empty space under it by iron bars, on which rest large flat bricks, and on these fine sand is put, in which the cuttings are inserted. The cuttings are not covered either by bell-glasses or frames. The sand in the pit A 1 is heated by the smoke from the fire C, which circulates under the bricks and fills the empty space EE. At the top of the back part of the furnace, which is built with bricks, is an earthern pipe to lead the smoke from the fire-place to the empty space, and at the further end of the house, under the pit A 1 an earthern pipe passes through the wall and forms there a chimney, which carries out the smoke. By this method of heating by smoke very little fuel (coal) is required, and no heat is lost. Besides, if perchance the fire should be extinguished at night, the smoke partly remains, and the bricks and the sand maintain a sufficient heat, particularly if in very cold weather the house is covered at night. The heat obtained in the sand is about 20° centigrade, or about 68° Fahrenheit, a temperature sufficient for Dahlias, Carnations, Fuchsias, Chrysanthemums, Begonias, Pelargoniums, and all herbaceous or soft-wooded plants, but it is necessary to keep the sand damp, and four or five times a day, at least, to syringe the leaves. The cuttings are put directly in the sand and not in pots, which saves room and time. The interior of the house is sufficiently warmed by the heat of the brick wall and the sand. Pit A is not heated, but is used as a receptacle for the cuttings when they are rooted and potted off singly in 2-in. pots. If thought necessary, however, pit A might be heated by hot-water pipes fixed to a saddle boiler on the top of furnace C. If the interior of the house be found too damp by the continual watering of the cuttings, an air-pipe may be introduced from the path B through the brick wall, through the bottom of the fireplace, and returned at some distance through the same brick wall in the path with several openings. All this may be done with the same fire and the same expense of fuel. This system may also be adapted to a lean-to house, of which the front is the propagating pit, and the back the receptacle for the rooted cuttings or the plants from which the cuttings should be taken.



Propagating House.

Jean Sisley.

Montplaisir, Lyons.

Goold's Chemical Compounds.—Like Mr. Hassock (p. 514) I can speak favourably of these artificial manures. In appearance they are simply a white powder which dissolves immediately in water, and may either be applied in solution or scattered thinly over a damp surface and watered in directly. They are cleanly in application, and leave no bad smell, and, as pointed out by your correspondent, they are prepared to suit different classes of plants, such as Vines, Ferns, Roses, &c. I have long thought that chemists would do something more for us than has hitherto been done in this direction, and I have no doubt that, when the public confidence has been won, a considerable development may be anticipated in the manufacture of these concentrated stimulants. People who live a long distance from the manufactory do not want to pay carriage for inert matter that is of no use to them. From my own trials of five different samples of Goold's manures, I can endorse all Mr. Hassock says respecting them. The Vine compound was especially noticeable in its effects. I am not troubled with much Grape shankling, but to any one who has a bad case of it, I would strongly recommend a trial of this Vine compound, and to report the result for the benefit of your readers.—E. Hobday.

—— I agree with Mr. Hassack as to the usefulness of Goold's manures which I have used with remarkably good results, especially in the case of Figs and Strawberries, but without a fixed quantity in a mixture of water. What quantity does Mr. Hassock put into a gallon of water with which plants in pots can be watered with safety? If correctly done the liquid form would answer much better than the practice of putting a pinch on the soil of the pot. The plant compound has a wonderful effect in increasing the size of Camellia blooms, the colours of which are also brilliant.—W. Culverwell, *Thorpe Perrow.*

ENGLISH HORTICULTURAL EXHIBITS AT THE PARIS EXHIBITION.

In your remarks upon the French exhibition allusion is made to the paucity of English horticultural exhibits, and "want of home organisation" is assigned as the probable reason of this lukewarmness on the part of our horticulturists. When arrangements were being made to forward the interests of our countrymen, and the list of Commissioners was issued, I felt truly grieved, as well as surprised, that horticulture had no special representative therein. I was then quite sure that 1878 would be but a repetition of 1867. Then, as now, there was an utter absence of home organisation, and, what was still worse, there was no one to represent or in any way aid our exhibitors on their arrival. Being stationed in the gardens the whole of that season, I had an opportunity of observing the difficulty which those who were not acquainted with French customs and the language experienced. I was the only individual there for a long time who could act as medium between Englishmen and the French officials. Now, on what a different footing did the Belgian growers stand. They had special officials, appointed by the State, to receive and convey he goods to the Exhibition, and experienced men to unpack, care for them, and pack them up again, a resident gentleman of high standing exercising constant supervision. The consequence was that trees, plants, &c., were sent in the most perfect confidence that they would be cared for whilst they were there. The contrast to me, as an Englishman, was, I admit, humiliating, and until horticulturists are made to feel that they are the objects of State consideration English culture will never be fully represented at foreign Exhibitions. Nurserymen generally cannot absent themselves for any time from their business; therefore, what was required was a competent man who would have received and aided, in any way required, exhibitors from this country; also, an influential person to forward and care for their interests. It is useless to cry over spilt milk, but, at the same time, it behoves us to take note of our shortcomings, and if, in the future, we resolve that English growth shall be worthily represented at International Exhibitions, we must see to and remedy this defect.

J. Cornhill.

FLOWER BEDS AT THE PARIS EXHIBITION.

In reference to your remarks on horticulture at the Paris Exhibition (p. 486) allow me to add that one bedding arrangement in the grounds there struck me as being particularly chaste and effective. It was doubtless intended to show that bedding out need not be the transitory affair which it generally is. Unfortunately I did not notice the exhibitor's name, being too much taken up with the plants and their arrangement. It was a circular border some 6 ft. in width, divided into a series of ovals and diamonds, the divisional and outside lines being composed of Lavendar Cotton (Santolina rosmarinifolia). The diamonds of Euonymus radicans variegatus, with a small Juniperus ericoides as a centre plant; the ovals were planted with the larger foliaged variegated Euonymus and a centre plant of Thuja aurea. The angles and outside edge were filled in with Euonymus radicans variegatus. The simplicity, yet good effect, of the whole was very striking, and, to my mind, equal to the best carpet or any other kind of bed in the exhibition grounds, and what was still better all the plants used were hardy. Another very effective arrangement in the same grounds was a large oblong-shaped bed edged with Festuca glauca, and planted with purple Petunias and Paris Daisies—plants at present not sufficiently valued on this side of the Channel. The beautiful purple of the Petunias, blended with the white flowers of the Daisies, had a charming effect, and would make a handsome combination for large vases or beds. W. W. H.

A story is sent to me about the late Mr. McNab, Curator of the Edinburgh Botanic Gardens. When Dubufe's celebrated paintings of Adam and Eve were on exhibition, Mr. McNab was taken to see them, and was asked for his opinion. "I think no great things of the painter," said the great gardener. "Why, man, Eve's temptin' Adam wi' a pippin of a variety that wasna known until about twenty years ago!" As genuine a bit of criticism as that of the farmer who told George Morland that he had never seen eight little pigs feeding without one of them having his feet in the trough. Morland altered the picture.—"The World."

INTERNATIONAL POTATO EXHIBITION.

At the International Potato Exhibition held at the Crystal Palace in September last, about thirty new varieties of Potatoes were brought forward by exhibitors, who were anxious to obtain for them critical consideration. It was found to be impossible to deal fairly with so many in the brief space of time then at command, and hence there were no certificates awarded. The committee charged with the task of inquiring into the merits of new varieties have now made their final selection, and have awarded first-class certificates to two varieties. It must be understood, however, that a very considerable proportion of the varieties brought under their notice were of superior merit, and may, hereafter, obtain the same distinction as is now conferred on the kinds which, for the present, they consider the best. It is not alone sufficient that a new variety should look well on the exhibition table, and be well spoken of as grown in the locality in which it originated. It should, in the opinion of the committee, be characterised by general usefulness, which includes adaptation to a variety of soils, constancy in respect to form and colour, high productiveness, comparative immunity from disease, and first-rate table quality.

Radstock Beauty.—A coloured Round, inclining to pebble shape, even, and somewhat angular, rarely attaining to large size, the skin tawny-white, smooth, and silky. The eyes are few, but conspicuous, the side eyes being of a rosy-purple colour, with arched brows of the same tint distinctly defined, the eyes of the crown or nose end clustered in a patch of a somewhat darker shade, giving to a good sample an extremely pleasing appearance. The growth is moderate, the produce mostly of smallish ware size, plentiful, and clean; the flesh fine in texture, mealy, dry, and delicately flavoured. First-class certificate.

Woodstock Kidney.—A white Kidney, of oblong shape, extremely even and smooth, the skin tawny-white, silky; the eyes few and inconspicuous, set level with the general surface in small clusters of dots at the crown or nose end. So regular in form is this variety that a fair sample may be likened to a model turned in a lathe. The growth is moderate and compact, the tubers plentifully produced, and mostly of middling ware size, and are in the very least degree affected by disease. The flesh is yellowish, fine in texture, and of the most delicate flavour. This is, all points considered, one of the finest varieties hitherto submitted to the International Committee. First-class certificate.

Scottish Horticultural Association, Dec. 3.—Mr. L. Dow read a paper on this occasion on the "Kitchen Garden," being a continuation of a former paper on the same subject. He again urged upon the attention of young gardeners the great importance attaching to this part of their profession. Operations in the kitchen garden, such as trenching, manuring, and cropping, were first alluded to, and then a detailed account was given of his mode of cultivating the Cauliflower, Pea, Carrot, and Turnip. As regard Carrots, he approved of deep trenching and deep manuring, a dry bog being the soil best adapted for their growth. He also spoke of the leafstalks of the Swedish Turnip being a good substitute for Seakale. Mr. Robertson Munro next read a paper on "Hardy Spring Flowers," including all those that bloom from January 1 to May 1. He named the most popular kinds, and explained the treatment of those that required particular cultivation. The following are some of the plants referred to, viz., Hellebores of various sorts, Snowdrops, Iris reticulata, Cyclamen Coum, and other varieties, Winter Aconites, Scillas, Sisyrinchiums, Leucojums, Hepaticas, Anemones, Myosotis, Crocuses, Daisies, Primulas of different varieties, Aubrietias, Saxifrages, Tulips, &c. Messrs. Downie & Laird showed Sibthorpia europæa variegata in good condition; Messrs. Dickson & Co. two stands of cut blooms of Chrysanthemums, containing sixty-three varieties, and a fine bloom of Thunbergia laurifolia. Mr. John Webster exhibited a new culinary Apple.

Ancient Buildings.—The Hon. Percy S. Wyndham, M.P., recently delivered a lecture on this subject at Keswick, in which he advocated the views of the Society for the Preservation of Ancient Buildings, drawing largely for his facts and illustrations from Mr. William Morris's annual report as hon. sec. of that society. As an example of a house which had never been "planed down" to uniformity he instanced with approval the seat of Sir Henry Vane, at Hutton-in-theForest, a residence built at three different epochs. Restoration, he averred, meant "destruction accompanied by a false description of the thing destroyed."

Fungi on Leaves.—Prof. B. Frank communicates to the "Botanishe Zeitung" (No. 40) an account of a few short investigations on parasitic fungi, conducted with the view of determining whether they are the cause, or merely the concomitant, of certain leaf-stains on which they occur. In the cases examined by him he succeeded in producing the stains by sowing and cultivating the fungi in question on the fresh leaves. The fungi experimented with were Isariopsis pusilla, and species of Ramularia and Cercospora; of none of these was the life-history at all well known.

Compulsory Destruction of Mistletoe.—In certain districts of the Rhine provinces police regulations have been issued ordering, according to "The Farmer," the destruction every year of all Mistletoe found upon fruit trees. The parasite must be removed each season by February at the latest, on pain of summary punishment. Evidently the Mistletoe enjoys but little veneration on this part of the German Empire, and the issue of an order for its destruction just at this period of the year seems strange indeed to English readers, who are just preparing to do full honour to it in connection with the approaching Christmas festivities.

NOTES OF THE WEEK.

New White-flowering Orchid.—What seems likely to prove one of the most useful Orchids that has been imported for a long time past is now in flower in Mr. Bull's nursery at Chelsea. It is a pure white form of the well-known Lælia anceps, than which, no plant is more prized in winter by Orchid growers. The flowers of the white kind are equally large as those of the type, and the petals and sepals are broad and wax-like, whilst the throat is well-formed and slightly tinged with green, like that seen in Eucharis amazonica. Altogether, it promises to be a grand addition to our list of winter-blooming Orchids.

Pitcairnia muscosa.—This greenhouse plant, now in flower in Mr. Parker's nursery, Tooting, is well worth culture on account of the bright orange-scarlet blossoms, which it produces on white, woolly stalks. Its leaves are similar to those of a Carnation, being silvery underneath. Good flowering plants may be grown in very small pots, or five or six of them placed together in pans would, when in flower, have a good effect.

Ipomæa Horsfalliæ in Small Pots.—In addition to being one of the most ornamental of stove climbers, this fine old-fashioned plant is useful and attractive when grown in small pots. We lately saw some grown in this way in Messrs. Veitch's nursery at Chelsea. They were from 15 in. to 18 in. high and bore several trusses of bright magenta blossoms, and, associated with Ixoras and other winter-flowering plants, they had a pleasing effect.

Stenomesson Hartwegianum.—This is a pretty little bulbous plant now in flower in the Pine-Apple Nurseries. Its blossoms, which are produced in whorls on the tops of fleshy stalks about 15 in. long, are tube-shaped, drooping, and of a rich orange-scarlet colour. It lasts in flower for some time and is of importance for winter decoration. It succeeds well in a cool greenhouse.

Adiantum Capillus-Veneris on Walls.—For covering bare walls in cool houses, or for similar situations, this is one of the best of Ferns When once established it spreads rapidly if the walls be kept moist, and soon forms a dense green cover on the sides of pathways or on the back walls of houses. We lately saw it succeeding well on the back wall of an unheated brick pit in Mr. Parker's nursery at Tooting. Where Fern fronds are in demand for cutting, too, this is an excellent way of growing them, as, when produced in a cool temperature, they are of a deeper green colour, and, being hardier, last for a much longer period when cut than those produced in heat.

Schizostylis coccinea in Winter.—This fine hardy plant is largely grown at Gunnersbury for furnishing cut blooms in winter. It usually flowers too late out of doors to be of much value, but as treated at Gunnersbury a good show of blooms is secured from October till Christmas, and even longer. The plants are planted out of doors in good soil during summer, and in autumn are lifted, potted, and placed in the greenhouse. This planting and lifting retards the flowering period to some extent, and the plants are not at their best until those left out of doors are over. For the cool conservatory this Schizostylis is one of the best plants which can be grown for winter, and any one who practises the method here described need not fail to succeed in its culture.

Sericographis Ghiesbreghtiana.—Wherever neat-flowering plants are required in winter for vases, this old, but comparatively little cultivated, Acanthad should be grown. It is easily propagated, and may be grown bushy in habit and in small pots, or large specimens may, under favourable circumstances, soon be obtained. In either case, when furnished with its light, graceful, half-drooping racemes of bright crimson blossoms, it forms one of the most attractive objects in the stove at this time of the year. It is grown at Gunnersbury Park, in company with such plants as Eranthemum pulchellum, Euphorbia jacquiniæflora, and Thyrsacanthus rutilans.

Orchids at Chelsea.—Among other fine Orchids in bloom in Messrs. Veitch's nursery are Cattleya exoniensis, with eighteen large, gorgeously-coloured blossoms; the pure ivory-like Lycaste Skinneri alba; and Odontoglossum Roezli album, small plants of which are furnished with from five to six spikes, each bearing six or seven large pure white blossoms with rich yellow throats. Pilumna fragrans is unusually well flowered, one plant bearing seventeen fine flowers. White Calanthes, arranged on each side of the pathways in the houses, make quite an avenue of graceful spikes of blossom. Abundance of other popular Orchids are also flowering well in association with those just named. In Mr. Bull's nursery there is likewise a charming group of Orchids in flower, arranged effectively on low stages, and many of them are growing in pans and on blocks suspended from the roof. In the centre of the house is a large group of Dendrobium superbiens, bearing long, graceful flower spikes, on some of which may be counted as many as twenty finely-coloured blossoms and buds. These are backed up by large spikes of the violet-scented Oncidium tigrinum, Calanthes, Lælia anceps, and similar plants. Among dwarfer plants are finely-flowered examples of the brilliant Sophronitis grandiflora, Masdevallia Harryana cœrulescens, Odontoglossum nebulosum, in several distinct forms, Lady's Slippers, and the blue-flowered Bollea cœlestis. To these may also be added Odontoglossum Rossi majus, Lycaste Skinneri, Dendrobium album, and several fine varieties of Cattleya maxima.

Laurustinus Indoors.—These are largely grown in the form of standards and bushes in Messrs. Osborn's nursery at Fulham, for indoor decoration about Christmas. When placed in a warm greenhouse the flowers come whiter than when left out-of-doors, and a quantity of plants just opening their blossoms in the nursery referred to will be a sheet of white flowers at Christmas. When associated as they are with finely-berried Aucubas, Skimmias, and similar plants, a good display is produced with little trouble.

Calanthe Turneri.—This is grown at Gunnersbury, where it is much prized for bouquet making. When well grown, as we here find it, its flowers are produced in large numbers on strong spikes, and being of a soft white with a rich violet eye they are more effective and useful for the purpose alluded to than those of other kinds of Calanthes.

Celosia pyramidalis in the Conservatory.—Few plants are more easily cultivated than the crimson or magenta-flowered Celosia, and few are more useful or effective at this season of the year. At Syon House it is grown for mixing with Chrysanthemums and other plants, and the richly-coloured, feather-like plumes have a striking effect. They may either be grown singly in 6-in. pots, or five or six may be planted together in large pots, under either of which conditions they afford quantities of good material for cutting; or they make a good display in the conservatory or dwelling house for a long time under favourable conditions.

Bamboo Mats.—A sample of the Bamboo mats alluded to in The Garden (p. 482) has been sent to us from Colchester by the New Plant and Bulb Company. The sample in question is stated to have been in use for three years, but it is still as good as when new. It resembles the Dutch reed mats (of which a representation will be found in The Garden, Vol. XIII., p. 311), but, being made of Bamboo, they are lighter and neater. These mats are about 4 ft. 6 in. in width, and can be made of any length that may be required.

A Finely-flowered Odontoglossum Alexandræ.—There is in the gardens at Gunnersbury Park, a remarkably healthy collection of plants of this best of Orchids. Some of the flower spikes are unusually strong and promising, and one plant bears a long branching spike which produced fifty large and delicately-tinted blossoms, forty-five of which were, at the time of our visit, still in full beauty. By growing a quantity of plants of this Odontoglossum, some of them are in flower nearly all the year round, and moreover, nearly all of them are in some way dissimilar, either in size or tint. We also saw several Odontoglossums producing flower spikes from the apex of the pseudo-bulbs as well as from the base, a circumstance about which some enquiries have lately been made in The Garden.

Royal Horticultural Society.—At the next meeting of the Fruit and Floral Committees at South Kensington, Messrs. Charles Lee & Son will exhibit a very interesting collection of hardy evergreen and variegated-leaved plants. Mr. Gilbert, Burghley, will again exhibit his new double Primulas, and Mr. Gardiner will send a large collection of Apples from Eatington Park.

Royal Caledonian Horticultural Society.—The annual meeting of this Society was held the other day in one of the anterooms of the Music Hall, Edinburgh, Mr. Maconochie Welwood, one of the vice-presidents, occupying the chair. After the minutes of the previous meeting had been read and confirmed, the treasurer submitted the annual financial statement, from which it appeared that the receipts had amounted to £1436 4s. 2d., and the ordinary expenditure to £1304 12s. 1d.. Last year the receipts were £713 14s., and the payments £697 6s. 10½d. On this occasion the receipts included members' subscriptions received for 1877, £14 13s.; for 1878, £439 14s.; for 1879, £3 2s. 6d.—total, £457 9s. 6d.; special prizes, £18 11s.; and admission to shows, £929 18s. 2d.; while the payments included show expenses—spring show, £280 3s. 10d.; summer show, £148 1s. 10d.; autumn show, £175 8s. 10d.—total, £603 14s. 6d.; prize money—spring show, £218 14s. 6d; summer show, £167 5s. 6d.; autumn show, £216 1s. 6d.—total, £602 1s. 6d.; and account for permanent tables, pedestals, and booths for secretary and treasurer, £195 7s. The total funds on hand at the 30th ult. were £666 3s. 10d., as compared with £534 11s. 9d. at the corresponding date of last year.

On M. Charpentier, head gardener at the Trianon at Versailles, has been conferred the rank of Chevalier of the Legion of Honour, after fifty-seven years' service.

ANSWERS TO CORRESPONDENTS.

Two Kinds of Grapes on One Vine.—The Vine from which both bunches of Grapes which I send you were cut is a West's St. Peters. The shrivelled bunches all grow on one rod, but the Vine shows no appearance of having been inarched. The sport, if sport it be, looks like Mrs. Pince's Black Muscat, but that variety has never been known to be in the Vinery.—B. W. S. [The two bunches sent are quite distinct. One is certainly West's St. Peters; the other (with shrivelled berries) has a flavour exactly resembling that of Mrs. Pince. It looks like the result of a bud or graft.]

Field Mice in a Rockery.—In reply to Mr. Ellacombe's enquiry (p. 526) permit me to say that I was troubled for years with mice in my rockery, until a cat was turned into it, when they disappeared like magic. —C. Isham, *Lamport Hall, Northampton.*

—— Mr. Ellacombe will probably find trapping of all kinds to be ineffectual in the present instance. If he does not dislike cats, he may speedily get rid of the mice in the following manner: Place, late in the evening, some small pieces of fish (herring is best) near their runs; the cats will come in the night, when all is quiet, and, getting scent of the mice, they will frequent the spot until the mice are either caught or rightened away.—J. Cornhill.

Rain Water.—Would this, caught in a large copper, if used for watering in a greenhouse, be injurious to the plants?—J. B. C. [No; it would be the best you could use if fresh and clean.]

Primulas Destroyed by Grubs.—I have grown a large batch of Primula sinensis this season, which, for health and luxuriance, I have rarely seen surpassed up to the time when they commenced to bloom, early in November, when I was much disappointed to find that the majority of the plants began to flag, and the large trusses of flowers to die down. For this I was at a loss to account, as the plants had received due attention with regard to watering, &c., and they were placed in a moderately dry and warm conservatory, where Primulas had hitherto done well. On examining some of them, however, at the root the other day, I found that the tap roots had been eaten, and that a grub had eaten its way into the very hearts of the plants, a circumstance which quite accounted for their failure. Having never experienced such a disaster in the case of Primulas before, I should be glad to know if any of your correspondents have witnessed a similar occurence, and, if so, what means were adopted to destroy the grubs.—T. Foote, *Clevedon Court, Somerset* [The grub in question is no doubt that of the weevil (Otiorhynchus sulcatus, well known for the injury which it does to the roots of plants. It must have been introduced with the soil.—W. W. S.]

Ferns suitable for a Cool Conservatory.—I am much obliged to "S. D." (p. 483) and others who have given me lists of Ferns suitable to plant in a cool conservatory, but as I fear that some of them from their size would scarcely be adapted for my purpose, perhaps I may be allowed to give a more detailed description of the place for which they are required. It is a glass, unheated structure, forming the entrance to my residence, and so shaded that it only gets a little sun in the morning, and a little in the summer time in the evening. Nevertheless, though so shady, I find that flowers brought on in pots elsewhere, when introduced, do exceedingly well there, and remain in bloom a long time, and it is now (Dec. 2), quite gay with Fuchsias, Zonal Pelargoniums, Primulas, Begonias, Chrysanthemums, &c. There are two borders about 2 ft. 6 in. wide each, with a central stone path, and my idea is to plant these borders permanently with Ferns, placing my flower pots among and between them so as to conceal the pots. The place is favourably situated as to temperature; I have never known the thermometer lower than 32.° If "S. D." or any other of your correspondents, would further oblige by giving me a list of good ornamental Ferns, just suited to the above conditions, bearing in mind my restricted limits, I should be glad, and the information may be useful to others as well as to myself. I do not want British Ferns, as many of them grow in profusion in this locality.—S. Champ, *Bridport, Dorset.*

Wintering Orange Trees.—Will you kindly inform me which of two conservatories is most suitable for wintering large Orange trees—the one kept at a night temperature of from 45° to 50° or the other, which is not artificially heated? also a few hints as to their culture?—H. S. W. [Orange trees require more heat and more careful treatment than they generally receive in order to induce them to yield good results. During the summer months it is usual to place large Orange trees growing in pots and tubs on terrace walks and in similar positions. This is an operation which may be carried out without much injury to the plants, provided they are not placed in such positions until the middle of June, and are taken indoors again early in September, and afterwards placed in a light, airy house, the temperature of which ranges about 50° during winter and spring, instead of being crammed into an outhouse, shed, or unheated corridor, to lose their leaves and get covered with filth and insects, as is too often the case. Few plants are more ornamental than well-shaped Orange bushes laden with fruit and blossoms, and they would no doubt be more largely grown than they are at present if the conditions of their successful culture were better understood. The best soil for Oranges is that composed of two parts good turfy loam and equal parts well-decomposed manure or leaf mould, to which may be added a little road sand. Some cultivators recommend turfy loam and fresh horse manure. The soil should be made firm in the pots or tubs, good drainage should be provided, and potting of established plants will only require to be done once in five or six years. Light, air, sun, and heat are highly necessary for the perfect growth of the Orange, although established plants will exist for years under very rough treatment. The Orange is liable to a kind of black fungus, which infests its leaves and gives them a very unhealthy appearance, but this can easily be removed by sponging with warm water and soap, and, indeed, it seldom occurs on well-cultivated plants. Green fly is destroyed by Quassia chips boiled in water for a quarter of an hour, at the rate of 4 oz. of chips to the gallon. The shoots may be dipped in the water when cool, or they may be syringed with it. Scale may be prevented by syringing frequently with Quassia water; and it may be effectually destroyed by methylated spirits of wine applied to the shoots with a brush.—S.]

Black Fly on Cherry Trees.—I have no doubt that if "B. S." will follow up any of the recommendations given him in last week's Garden (p. 526) he will be able to keep both black and green fly in subjection, but for outside work, cultivators will easily understand that fumigating is the least practical method of dealing with this pest. In my own experience I have found nothing better than good Tobacco juice, applied at the rate of one pint to three gallons of water. The water may be soft or hard, but I consider soft water preferable if it can be had. Stir the water and juice, so as to mix both well together, and apply them with the syringe or engine. I have tried dipping the points of the shoots in a bason containing this mixture, but I consider that to be a very slow process; if it saves a little material, it wastes a very great deal of time, and where there are a good many trees to get over, the time saved more than pays for the extra material used. I used to syringe before nailing or fastening in the young shoots, but I now fasten them in before doing so, and I consider the work much better done, as the shoots are held in position and are thus subjected to the whole force of the syringe or engine. "B. S." should examine the trees after the first syringing to see that every fly is killed, and it may be necessary to give two or more syringings at short intervals if they should again make their appearance.—Jas. Fairweather, *Halston.*

Currants losing their Bloom Buds (p. 526).—I expect that sparrows are picking the buds off "F. W. H.'s" Currant bushes. My garden, like his, is situated in the heart of this city, and my experience is that these little depredators pick the buds off my Currant and Gooseberry bushes, and also off Plum trees trained against walls. I have tried many so-called remedies to prevent them, but the one that I have used for these last few years I find to be the best and simplest, viz.: After pruning my bushes, I procure some white worsted or knitting cotton, and string it several times from side to side, and once or twice across the bushes, leaving it there. No more sparrows come near them; they seem to me to be afraid that it is a net set for them. If "F. W. H." will try this plan, I think it will answer his purpose.—J. D., *Ripon, Yorks.*

Quickly-grown Pine-apples.—In reply to "H. A. B." (p. 526), allow me to say that the fruits from the old stools were cut last April; one weighed 4 lb. 4 oz., the other other 4 lb. 12 oz.—M.

Names ot Plants.—*T. W., Torquay.*—Cestrum aurantiacum. *F. Banks.*—Apparently some species of Lycaste, but which we cannot say from the dead specimen sent. *W. J.*—The erect kind is Selaginella cuspidata: the prostrate one S. cæsia.

Questions.

Eucharis intermedia.—Can any of your readers instruct me how to flower this Eucharis? I have no difficulty with E. amazonica, but many cultivators inform me that they have never succeeded with E. intermedia.—C. E. B.

Binding Compounds.—I am desirous of forming a perpendicular bank from 8 ft. to 10 ft. high, and would be glad to be informed if there is any binding mixture suitable for that purpose. I have heard that sand and chalk make a binding compound, also ashes and chalk. I should be glad of information on the subject, also stating the best proportions. I have sand on my ground, and chalk exists in the neighbourhood. —S. F.

Lamp Heating.—I have recently heated a small greenhouse with a paraffin lamp, and I fancy the smoke or smell from it has injured the plants. Will any of your correspondents say if paraffin is injurious, and if there be any other oil better suited than paraffin for heating a small house?—A Subscriber.

Pollard Oaks.—Some Oaks of fifty years of age were becoming crowded, but as the timber was not then required, they were beheaded into poles; the stems soon sprouted from top to bottom. Is there any objection to this system? or is it to be recommended under similar circumstances?—C. I.

Pomegranates.—I have, I believe, a double Pomegranate, in the form of a bush 3 ft. high and 2½ ft. through. It came from France two years ago; it made 4 in. of young wood last year, but did not flower. Would some one kindly inform me how to treat it? Should I repot it now? and what soil should I use? Will it require cutting back? When ought it to flower? on old, or young wood?—C. J.

Ice Houses.—Will any reader of The Garden tell me how to make an ice house? I propose digging out the clay to the depth of 3 ft. or 4 ft., and draining it; then I intend building what I have to build in bricks, covering the whole with clay and soil and planting it with shrubs. About what size should such a house be for a private family, whether it should be round or square, and what thickness of earth will be enough to cover it?—W. H. B.

No 370.] SATURDAY, DECEMBER 21, 1878. [Vol. XIV.

"This is an art
Which does mend Nature: change it rather: but
The Art itself is Nature."—*Shakespeare.*

FLORAL DECORATIONS FOR CHRISTMAS DAY.

Allow me, once again, to offer a few suggestions relative to the floral decoration of dinner-tables on Chistmas Day. A year or two ago, I wrote a similar paper on this subject for The Garden, and in it I gave descriptions of two tables florally decorated—one expensively, and the other the reverse. I shall not now, however, direct particular attention to the arrangement of any vase or stand, but shall content myself with a few remarks respecting what flowers and foliage look best when subjected to artificial light, and what will last in good condition for the greatest length of time. As to the size and number of the stands to be employed, that, of course, must be regulated by the size of the tables to be decorated, and also by what the decorators may have in their possession; but, where stands are about to be purchased, I should recommend their being of the March form, with trumpet, or the trumpet with curved branches. I have myself seen and decorated many other varieties of stands, but none have looked better or, indeed, pleased me so well as these two shapes. Next to be thought of comes the material in which the flowers are to be kept fresh. This is nearly always either water, Moss, sand, or worked clay. Blooms will last longest in water, the next best material for this purpose being Moss; but I prefer silver sand well moistened, as, though, perhaps, the flowers may not retain their freshness quite so long in it as if they were in water, they retain their position better than in any other material. I need hardly say that I use sand only in flat tazzas or similar designs, as in trumpets water, of course, must be employed. At this season I prefer arrangements in white and scarlet or crimson flowers only to those composed of mixed tints; but many may be of a different opinion, so I shall not wholly limit myself to those shades. For large, bold decorations there are no two handsomer or more useful flowers grown at this season than the lovely white Arum Lily and the scarlet bracts of the Poinsettia; the latter can be obtained in different shades, from vivid scarlet to deep crimson. Large-sized blooms of white Chrysanthemums may also be employed with good effect in floral arrangements. Too many large flowers should not, however, be used, as they tend to make a stand look heavy, but when they are employed they should stand out well one from the other, and if thus placed in the bottom tazza of a stand they look very much better than smaller flowers. Next in size come Camellias, Eucharis, Gardenias, and Roses, all of which are suited for portions of stands, such as second tiers, &c., or for mixing amongst the larger kinds just enumerated. Then comes a size smaller still, viz., Pelargoniums, Carnations, half-blown Rose-buds, Narcissi, Primulas, Stephanotis, Tuberoses, Azaleas, Pancratium fragrans, Neapolitan Violets, &c., all equally useful for second tiers or for specimen glasses. Lastly in the floral list come those light and elegant varieties which are suited for trumpets, and which give a light finish to the whole arrangement, viz., such flowers as those of the Lily of the Valley, Roman Hyacinth, and small Paper-white Narcissus. Many varieties of Ferns and foliage are always obtainable, but none last so well as the old favourite, Adiantum cuneatum; for the edges of tazzas Pteris serrulata looks well and remains fresh for a long time if the fronds be of mature growth—a point which should be borne in mind with respect to all Ferns, as young fronds will not stand when cut and brought into the hot, dry air of a room. For trailers in the Fern class nothing is so effective as long sprays of Lygodium scandens (the creeping Fern). Having said so much for flowers and Ferns, I must not forget our old friends the Holly, Ivy, and Mistletoe, without which one could hardly realise the season, nor would the decorations be complete without them. Sprays of these plants should be interspersed through all floral arrangements on Christmas Day. For decorating the different dishes of fruit these three last-named plants will be found most effective; also the berry of the Arbutus, which looks almost like the small fruit of the Siberian Crab. Take, for instance, a dish of purple Grapes, and what will come out better against their rich deep tint than little sprigs or sprays of Golden Holly or Ivy, and the crimson berries of either the Holly or Arbutus, or the white berries of the Mistletoe. Light-coloured Grapes, again, associate well with the small-leaved Irish Ivy, the dark green, bright-leaved Holly and its scarlet berries, all of which have a charming effect at this season, and in like manner they can be adopted for decorating every kind of fruit that may be on the table, if a little forethought be given as to which combination will look best.

Annie Hassard.

A GARDEN IN CENTRAL EUROPE.

It was a pleasure to find an Englishman, who evidently possesses experience in garden matters and good taste, criticising the Imperial Gardens at Schönbrunn (p. 365). He hit off all their worst points, but if he knew the Viennese of the present day he would see some need for the "immense deserts of gravel" to which he alludes, and also for the interminable alleys, with their inevitable espaliers of Beech, Maple, and Hornbeam. The townspeople, on their holidays and festivals, flock to these really fine resorts in thousands to promenade, and for amusement and music, of which they are devoted admirers. Then, with an almost tropical sun, one can appreciate the efforts of the old planters who devised these much-abused alleys and enormous hedges. Many of my fellow cultivators can hardly imagine a good and interesting garden possible without its usual accompaniments of Laurels, American plants, Sweet Bays, Laurustinus, and Rhododendrons. Such gardens are here in Central Europe a necessity, and afford as much enjoyment to their possessors as others do of quite a different character. It may be considered heresy to say so, but our English gardens of the present day lack variety and beauty of foliage in deciduous trees and shrubs, and they are being reduced both by owners and by those in charge of them to a monotonous dead level. Every one plants the evergreens just mentioned in great quantities, and in all places, right or wrong. Thus, lightness, grace, and breadth are lost, the views are confined, and a decided heaviness and lumpishness is the result. In town gardens exclusiveness may be allowable, for we always try to shut ourselves up from our neighbours, but in the open country the case is different. Perhaps some one will have the courage to make a departure from this stereotyped style, which has greatly robbed English gardens of their charms. Foreigners are, however, delighted with them, because they see so much that is new to them in style and material, and they are especially fond of the greenness and freshness of English lawns; good turf on the Continent is costly, while in England it can be obtained with little or no care. A good garden in this part of the world is furnished with a large assortment of deciduous trees, such as Red American Oaks, Tulip trees, Maples, Chestnuts of many sorts, Limes (especially the American kinds, which have the good property of blooming late and of retaining their freshness of foliage till late in autumn), Catalpas, Copper Beeches, Gymnocladus, Sophoras, Paulownias, American Walnuts, and Salisburia. These trees yield fine foliage in summer, and produce beautiful leaf tints in autumn. They are planted largely in groups, consisting each of five or six trees set close together, the trunks of specimens 1 ft. or more in diameter being often not more than 3 ft. or 4 ft. asunder. Individually, such trees are not regular or symmetrical, but they form charming groups for the artist and the true lover of Nature, both of whom dislike straight stems and perfectly-balanced specimens. Two or three kinds of trees may be allowed in a group for the sake of giving it character, but, as a rule, the fewer the better. A bright-berried tree, such as the Mountain Ash (yellow or red), Crabs, or Sorbus, may be added, as, in their struggle for existence, they are so graceful. Thorns are admissible, and also Buckthorns, with their beautiful orange-red fruits. Large groups are made up of the commoner kinds of Oak, Elm, Ash, and Alder, and it is only on the outsides of such groups that one finds the better kinds of plants. The Oriental Plane and Tulip trees, the American Oaks and Ailantus, are excellent subjects for the sides of walks and roads, their large foliage affording the shade so much needed when the thermometer for weeks stands at 30° of warmth (Reaumur).

Evergreen trees consist of Thuja plicata, Warreana, occidentalis, orientalis, Craigi, sinensis aurea, and Cupressus Lawsoniana. Juniperus virginiana is largely planted, not only for effect, but also for its wood, and for its fruits, which are made into a sort of jam. Associated with these may be found Taxus baccata fastigiata, drupacea, erecta, pendula, and aurea. Pinus Strobus is grand either alone or grouped with the Red Cedar and Pinus maritima, austriaca, and Cembra are also largely used in groups or as single specimens. The common green Holly was once thought to be unsuitable; it is, however, now planted out, but only in the shade, as it is found to suffer from direct sunshine, but not from 25° of cold (Reaumur). Picea nobilis and nobilis glauca, Wellingtonia, Thujopsis borealis, Thuja gigantea, Thujopsis dolabrata, Picea Nordmanniana, P. lasiocarpa and P. grandis, are all quite hardy and grow well. The three last will make excellent forest trees if seeds of them can be obtained in quantity. Abies viminalis, orientalis, americana alba, and canadensis, are also at home. With such materials as these, one can easily make an interesting and enjoyable garden. Hardy shrubs of a deciduous character are nearly as numerous as those quoted in any good English catalogue, and the best kinds are largely used, and mainly in groups of one variety on the Grass, or singly if the sort possesses a good habit and flowering properties.

Virginian Creeper and Veitch's variety, with Aristolochia Sipho, Menispermum, Ivy, and Clematis, are made good use of here on living trees, on walls, in beds, and as edgings and hanging garlands. Sophora japonica pendula is a beautiful plant for lawn decoration, but it should be grafted at least 10 ft. from the ground. Celtis australis is an excellent plant for masses, especially when old; so is the Judas tree (Cercis Siliquastrum). Platanus striata makes a good low tree, and the same may be said of Ornus Europæa, Elæagnus angustifolia, and E. sativa, Æsculus flava, Pterocarya caucasica, and Bignonia Catalpa. Such are some of the chief plants which the climate permits the landscape gardener to use, in his imitation of Nature, on a comparatively small scale. The winter here is nearly always severe, accompanied by much snow; the summers, too, are very trying, and, unless abundance of water be at hand, gardening is most disheartening. It sometimes happens that for four months no rain falls, and then newly-planted shrubs and trees invariably die if not well watered every other day, although mulched with some retentive material. It is even found to be necessary, during hot summers, to give water regularly to plantations which have been planted twenty years.

Moravia. Sylvestris.

Honeysuckles and Clematises on Trees.—There would be some difficulty in establishing the above or similar plants in the exhausted soil around the trunks of trees, so as to enable them to grow with any degree of vigour. To overcome this procure the longest plants you can get, and plant them in a prepared pit 4 ft. or 6 ft. from the bole of the tree; connect this pit with the tree by a trench 9 in. or 12 in. deep; plant the climber in the prepared pit, lay the long stem along the trench at bottom, cover it the whole length of the trench with a bottomless draining pipe, and turf the whole neatly over. You will thus have a trailing plant growing at a distance from the tree, but connected with it by means of an underground stem. In this way even the choicest standard Roses—too often bare and unsightly—may be ornamented with some delicate climber without detriment to the Rose.—Thomas Williams, *Ormskirk.*

PROPAGATING.

SPRING PROPAGATION.

In large private establishments, and also in the majority of nurseries, it is often found impossible to secure the desired amount of plants for summer flower gardening and other purposes, by the ordinary method of autumn propagation. It frequently occurs that in hot, dry summers, such plants as Verbenas, Calceolarias, tricolor Pelargoniums, &c., fail to grow with that freedom which is necessary for the production of an abundance of healthy cuttings. If too, through some unforseen cause, the stock of any particular plant happens to run low at housing time, there is no remedy but to resort to a speedy method of working up a stock in the spring. In the case of novelties, it is desirable to have the means of being able to quickly increase them. The wood of many plants is in a better condition in spring for cuttings than later in the season. A small propagating house heated by hot water, or a brick pit filled with tan, is indispensable for this purpose. The chief point is, the means of creating at will, and steadily maintaining a brisk, moist heat both night and day. If this accommodation can be commanded, then there will be no difficulty in rapidly increasing all the so-called soft-wooded material. Such plants as Verbenas, Celosias, Alternantheras, Cupheas, and Lobelias, will, of course, be wintered in store pots, and supposing that they have been kept perfectly cool, and are fairly healthy, they will be in good order for introducing into heat the first week in January. But here caution must be exercised not to increase the heat too suddenly, as too great a change will debilitate the plants to a serious extent. During January, the day temperature may be 55°, and that of the night 45°. As the days lengthen, the average temperature may be increased until, in March, the maximum of 70° by day and 60° by night be attained. On bright sunny days the thermometer will naturally run up much higher, when a corresponding rise of higher temperature may be given. Great caution must be exercised in giving air, as draughts of any kind are very injurious, and so is hot sunshine. The cuttings being tender, must be screened from all vicissitudes of climate. In a house devoted to propagating purposes there should be some kind of provision made for bottom-heat, which is best furnished by a hot-water pipe to be heated independently of the rest of the house. The stage on which the pots are placed should be quite close and covered with ashes, or Cocoa-nut fibre, which must be occasionally turned over and well wetted so that a gentle, dewy moisture may continually arise therefrom. About the beginning of February propagation may commence by taking off the most advanced cuttings. If a large stock be required do not cut too closely. There is nothing gained by undue haste. If the plant from which the cuttings are taken be checked at the outset it will have a vast influence on the after produce.

There are two methods of striking the cuttings; they may either be inserted in pots specially prepared for them, or they may be dibbled into a bed of sand and potted after they have become rooted. Both plans have their respective advantages, the latter requires the least amount of labour and demands less care in watering, but the former is handiest if the space be limited, as each pot may be removed to other quarters as soon as the cuttings are fairly established, where they may remain until convenience is found for potting them off. 4-in. pots are best for this purpose. They should be filled about one-third of their depth with drainage, and then to within 1 in. of the rim with free, light soil, covering the whole with silver sand and filling the pots quite full. Verbenas are easily propagated. If only a piece of stem with a pair of leaves attached be inserted they will root all up the stem. Lobelias, Alternantheras, and many such plants do not require to be cut to a joint; they root freely up the stems if in sufficient heat. Ageratums, Centaureas, Petunias, and all such plants as are more or less of a woolly character are best cut to a joint. Spring is a good time to propagate many kinds of flowering shrubs, such as Spiræas, Lilacs, Deutzias, &c. Plants that have been forced for bloom will furnish good cuttings which will readily strike at that season. Pelargoniums of all kinds will also strike freely, but they require different treatment. They should, when inserted, be put upon a shelf near the ventilators, where they get a circulation of air around them. Do not insert them deeply, and only water them when quite dry and on fine days. All the tricolors, bronzes, and variegated kinds do well thus treated. The old plants will break again freely, and will form better material than if not headed down. The Lemon-scented Verbena will also root readily, but cuttings of it are easily affected by fluctuations of atmosphere, and, if once they flag, they inevitably damp off. Covering them with a hand-glass in the daytime will ensure them against accidents of this kind. April and May are good months to propagate the double Primulas. Place them under a hand-light in 2½-in. pots, taking the glasses off for an hour in the morning, and leaving a little air on at night. Thus treated, ninety-five per cent. may be relied on to root. Centaureas strike well from spring cuttings; the wood, then, is devoid of that wooliness for which this genus is remarkable. They make roots as freely as Verbenas. They should, however, be inserted in small pots, the roots being so brittle that they break when potted off from store pots. Fuchsias, too, should be struck in small pots, and they should not be allowed to become potbound, but should be grown on without check.

If a large quantity of any one kind of plant be required, then, as the cuttings root, they may be removed to the cooler end of the house, when they, in time, will furnish others. Considerable attention is necessary in the way of watering, as, although they must never get dry, yet excess of moisture amongst them will have to be guarded against. They will require constant supervision in the way of cutting out dead and decaying leaves, for which a small pair of sharp scissors will be found the most useful. Watering should always be performed about the middle of the day, as it is then better seen what is in need of watering, and the foliage dries before night. With respect to the admission of air, there will be need of but little, except what can be given at the top of the house the air merely requires changing, no brisk circulation being allowable. If the front part of the house be of brickwork, a wooden flap here and there is all that is necessary, and, in the earlier period of the season, these will scarcely be needed. The main secret of success in propagating is attention; a slight amount of neglect, either in watering, shading, or ventilating will produce such effects as the initiated know full well cannot be remedied by any amount of after care. The successful propagator is generally the first at his work, and the last to leave it. I have known some who carried their attention so far as to prefer making their own fires, and attending to them themselves, the whole winter through, and it is only fair to say that they achieved great success. Propagating probably taxes the ingenuity and exercises the faculties more than any other branch of gardening, and if tedious, and causing at times some anxiety, there is intense satisfaction in finding that one's care is requited by the increase of useful plants. J. Cornhill.

Byfleet.

Gladioli Wintered Out-of-doors.—It has been my practice for some years past to leave our Gladioli in the ground all the winter, taking them up once in three or four years and transplanting them. When the tops are dead I cut them off near the ground and give a good coating of half-decayed manure and leaves before frost sets in; this, I find, to be sufficient protection, the soil here being a light, sharp loam. I have sometimes had the early kinds damaged by late spring frosts. It is, I think, incorrect to say that bulbs taken up and dried till spring do not produce as fine spikes as those left in the ground. I know a very extensive grower and breeder of Gladioli, whose seedlings every year are numbered by thousands, besides a general stock; these are all taken up every year, dried, cleaned, and labelled, and yet at every exhibition at which they have been shown they have carried off most of the prizes for years past. When in full bloom, so fine and varied are they, a sight of them is one not easily to be forgotten.—W. Divers, *Wierton, Maidstone.*

FORWARDING EARLY CROPS.

Although hot-water involves much less trouble in forwarding early crops than fermenting material, yet there is no warmth so regular and congenial for the purpose as a good bed of leaves, such as those of Oak or Chestnut, which, got together before they lose their virtues, hold heat for a considerable period. To catch them at their best they should not only be collected as soon as possible after they are shed, but when they are in a moderately dry condition, for, if wet, the fermentation is either excessively violent or so imperfect as to be of little or no service unless mixed with an equal bulk of stable manure. The two combined, if turned over a few times and thoroughly sweetened by allowing the rank steam and gases to escape, form an admirable bed for forcing Asparagus, but to have this esculent in perfection during January and February, it is necessary to have it in pits, where there is a hot-water pipe running along the front, without which there is not sufficient top-heat to admit of giving air to get the heads of their proper colour and flavour. To have Asparagus really good the temperature should range between 50° and 60° according to the state of the weather, in addition to which light has great influence upon it, and it is important therefore that it be admitted as freely as can be done by having clean glass, and the covering, if any, removed from it in the morning as early as circumstances will allow.

Next to forced Asparagus, Potatoes are considered the greatest luxury in the vegetable way, and there is no plan of obtaining these so good as growing them on a gentle hotbed, as, although warmth is required for the roots, the cooler in reason the tops can be kept the better and more satisfactory will the crop be. Heat above only produces long, attenuated haulm, and more particularly is this the case if there is at any time a deficiency of air or sun to thicken and consolidate the growth and foliage, the latter of which, when under confinement, always comes thin and flimsy in texture. One advantage in growing early Potatoes is that the frame may be made to do double duty, and thus economise space, as, between the rows, Cauliflower or Lettuce may be sown and raised, or a crop of Radishes obtained and cleared off long before they can be got in the open, however favoured a border or position they may have. In order to get these well in advance of the Potatoes it is always advisable to soak the seeds a few hours in warm water before sowing, which accelerates its germination considerably, but, when this is done, it should be well timed, so as to have the bed all ready, with a proper degree of heat in the soil, otherwise the tender germs get a chill, and instead of having handsome-shaped Radishes they are all fangs and roots. Where frames are now in use, and it may, on that account, be desirable to defer making up hotbeds for Potatoes, they may be forwarded very much by placing them on end in boxes, filled with sifted leaf soil, so as to just cover the crowns of the tubers, and if then stood in any warm shed or house they will form strong shoots, round which a quantity of roots will be emitted, so that each Potato may be lifted and planted with a large ball without suffering the least check if the planting is done in a careful manner. A very good way of getting a few early is to get some large pots and place two or three tubers in each, according to their size, when they may be set in any light, airy house, where they can get a little heat, and afterwards plunged in a bed of fermenting material to finish them off. The pots at starting should only be about half filled with light soil, as they do better earthed up later on when the tops get advanced and require support to keep them erect.

Seakale may be forced to any extent with a few cartloads of leaves shot in any out-of-the-way corner by digging up the roots and plunging them therein, the bulk of ours being brought on in this manner before the leaves come into use for hotbed work, and while they would otherwise be lying idle. The plan we adopt is to pack the roots tightly in rich soil in large pots, over which others of the same dimensions are nverted, and slightly covered to exclude the light, when the heads come slowly on, are of large size, and of most perfect whiteness and quality. The old-fashioned way of growing Seakale, by making huge beds of fermenting material over it in the open ground, involves so much labour that the produce is in no manner commensurate; and as fine roots, with large developed crowns, can be grown anywhere in one season from the time of planting, the wonder is that so many still go to the trouble and tolerate the litter and untidy look it occasions. Besides forcing well in a bed of leaves, as above named, Seakale may be brought on almost anywhere if there be heat available, as there is always near chimneys or furnaces in use, or where hot-water pipes run underground before reaching the houses they are intended to warm. Such places made the most of will yield a large supply and answer equally well for Rhubarb, but as the heat so obtained is of a dry nature, the soil immediately surrounding the roots should be kept well watered to prevent them from shrivelling.

A little later on, French Beans do far better planted out on hot beds, than they ever do with their roots confined to the limited area of a pot, however well they may be attended to, and if a pit can be made use of with a pipe for top heat, they succeed almost as satisfactorily as when planted out in the open. The steam arising from manure and leaves, impregnated as it is with ammonia, is very conducive to the health of the plants, as it not only wards off red spider, which are generally so troublesome to Beans grown under glass; but the leaves, no doubt, absorb some of its nutritive properties on which the roots feed likewise, when it is passing through the soil. It is a well-known fact to those who have had much to do with raising Cucumbers and Melons, that there is no place where they do so well after the turn of the year, as in a hot-bed frame, and many who grow them on trellises in houses after, prefer sowing their seed and nursing the plants on in the genial atmosphere such a situation affords. A small frame will render much good service for all purposes of this kind, and the most useful way of making it up is to have a few rough faggots at the bottom, so as to admit of driving fresh heat under by means of linings, instead of having so large a body of stuff at starting. The linings can then be added to, or renewed at pleasure, and a tolerably regular temperature thus kept up. S. W.

A DECEMBER AFTERNOON AT KEW.

All who love their gardens should now and then pay a visit to Kew. The rich collections of trees and shrubs are capable of affording valuable lessons to the planter at all seasons of the year, and now that many of the hardy plants of old English gardens are coming to the fore again, where can one see them so well as at Kew? Then, again, there are the many rich collections of exotics under glass gathered together from all parts of the world, worthy, both as regards extent and keeping of a great national establishment. From an educational point o view, one of the great advantages possessed by Kew over private establishments or nurseries is the generally clear manner in which the plants are named; and the free way in which one is allowed to move about is a great boon to those who are trying to familiarise themselves with the various forms of vegetable life which are here so abundant. On a winter's day the glass houses will generally be the most attractive, and one of the most interesting of these is the large temperate house. Many of the specimens here are of large size, thus giving one an idea of their development in their native country. The Acacias will shortly be a special feature in the house. Already one or two of them are beginning to show colour, and the others have thrown out their globular or, in certain species, elongated heads of flower, which, during the next three months, will be masses of bright colour. Those whose memories carry them back some thirty or forty years will recollect the handsome specimens of Acacias that were common then in many conservatories, but which are now succeeded by plants not half so valuable or showy. Everything, however, comes to the surface in turn. Acacias will again be sought after, and I know of nothing so likely to hasten that time as a visit about next February to the temperate house at Kew. The following kinds are free bloomers (and their habit of growth is so elegant that they are ornamental when not in flower), viz., Acacia pulchella, armata, longifolia var. floribunda, grandis, verticillata, linearis, Drummondii, leprosa, platyptera (now in flower), hybrida, diffusa, vestita, and Riceana. The latter is an excellent winter-blooming kind, well adapted for training up the rafters in a greenhouse. Its sprays have an elegant drooping habit, and its yellow flowers are freely produced. Acacias are equally at home as pot plants, or planted out in the border of a conservatory, and many of the free-growing kinds are desirable subjects with which to cover a wall or to furnish a pillar, or any other naked surface under glass. The Polygalas are also deserving of mention as conservatory plants. They are seldom altogether flowerless, and their bright pea-shaped blossoms are very pretty. The views from the galleries in both the temperate and the Palm-houses are very interesting, the vegetation looked down upon being so different from what is met with in this country in the open air. Here may be seen Araucarias towering up to, and in one instance actually touching the roof; wide-spreading Palms and tree Ferns, and long, slender Bamboos—in fact such a picture as is that here presented, could be found nowhere else.

In one of the circular annexes or wings at the end of the temperate house is a most interesting collection of Aloes and Cacti. It is amusing to watch the effect produced by this class of plants upon visitors who had never previously seen such an assemblage of grotesque vegetable forms. Their singular appearance seems to open up a new world to them. In the Palm-house Strelitzia reginæ is in flower. It is an interesting old Musad, and its singular blue and yellow flowers, borne on long, stout stems, are at this season and onward very effective. Tillandsia splendens, a Bromeliaceous plant, with a marbled aspect, would form a striking object in a small collection of stove plants. At this season, when flowers are scarce, Strobilanthes isophylla is worthy of notice from its dwarf, bushy habit, and the profusion of pale lilac flowers which it produces. The variegated Fig (Ficus Pearcei) has breadth of foliage to recommend it; and as an easily-grown decorative plant for a warm conservatory, Holcus saccharatus, from its light, elegant growth, would give character in winter. The collection in the tropical house near the Kew Green entrance is always attractive. Beauty of form, even when destitute of bright colour, has charms for most people. But many tropical plants have brilliant-coloured leaves, and for a moderate-sized stove there is no class of plants more effective than the Marantas. They are not difficult to cultivate; rough, fibry peat, crushed charcoal, and sand, with plenty of drainage and abundance of moisture, form the chief requisites. The following are selected from the Kew collection, viz., Maranta fasciata, Lindeniana, rosea lineata, porteana, Veitchi, zebrina, and splendida. Amongst the Ferns, at which I had only just time to glance, Adiantum æthiopicum seemed well worthy of notice. It has a tall, slender, elegant habit, and although introduced long ago, it is still rare.

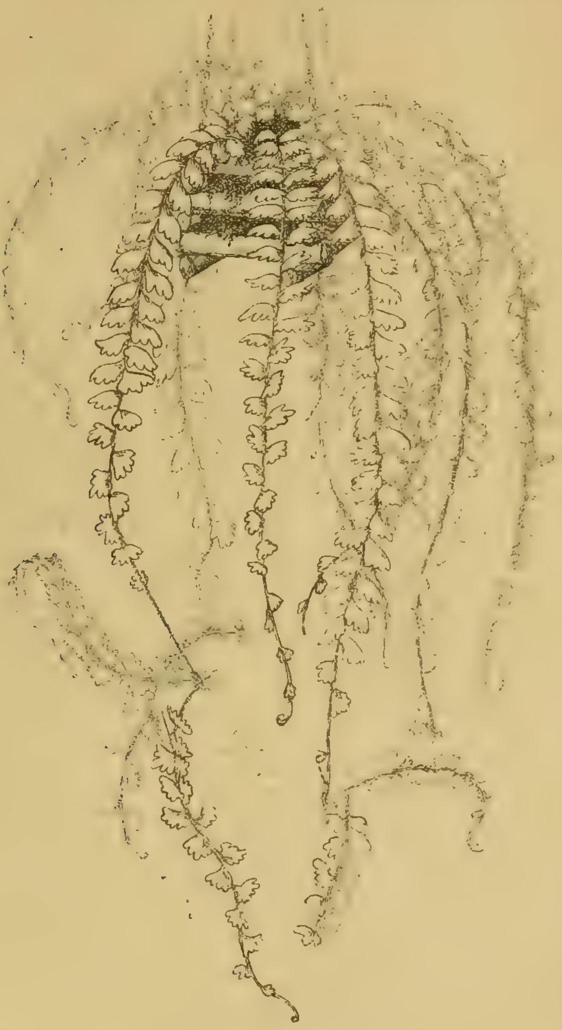
Now, when locomotion is so easy and rapid, the impetus that Kew is capable of giving to gardening assumes an importance which it did not possess twenty or thirty years ago. One can now leave home in the country, 80 or 100 miles away, reach London by half-past ten or eleven o'clock in the forenoon, spend four or five hours at Kew, and be back home again in the evening. I look upon Kew as a large national school of gardening, and it would be an enormous advantage to country people if they could obtain admission, say by eleven o'clock in the morning, instead of the usual late hour in the day. I shall probably be told that gardeners, both amateur and professional, can already gain admittance by attending at the curator's office and inscribing their name and the object of their visit in a book. That this is a boon I do not deny, but why retain even this much of red tapeism if it can be proved to be unnecessary. E. Hobday.

The Weather in Ireland.—The weather here is very severe for this part of Ireland. At the present moment (seven o'clock Monday night) we register 21° of frost. We had 19° last night, 21° on Saturday, 20° on Friday, 16° on Thursday, 18° on Wednesday, 19° on Tuesday. All outdoor garden operations are at a standstill, the frost being too severe even for trenching.—J. Clews, *Kells, Co Meath.*

THE INDOOR GARDEN.

ADIANTUM EDGEWORTHI.

This is a distinct and useful Fern, and one which thrives well in an intermediate temperature. It is closely related to A. caudatum, but differs from it in its pinnæ, which are more deeply cut, glaucous, and altogether more ornamental than those of A. caudatum. It is one of the best of basket Ferns, and it also looks well when grown in suspended pots. It is largely used by Mr. Wills for suspending amongst tall plants in decorations in which choice materials are employed, and our woodcut was prepared from one of his plants. It comes from the Himalayas, China, and other parts; in fact, it is a Fern which has a wide distribution. S.



Adiantum Edgeworthi.

Aponogeton distachyon in Small Aquaria.—This interesting aquatic plant may be grown in small glass cases in dwelling-houses with good results. We lately saw a small square glass aquarium in which several plants of it in small pots were growing freely, and showing flower. The pots were submerged to a depth of 6 in. or 7 in., and their surface was covered with stones and shells, which also covered the bottom of the case. A little air at the top is necessary, and also fresh water occasionally, to ensure healthy growth.

STOVE CLIMBERS.

Climbing or trailing plants that will bear a greenhouse or conservatory temperature are plentiful enough, but for embellishing the roof of a stove the choice of varieties is more limited. What they lack in numbers, however, is fully made up by the gorgeous display several of them make, and the great value of their flowers for cutting. Take the Bougainvilleas, for instance, the rich inflorescence of which is so telling and effective as to quite brighten up any epergne or vase they may be used in, and besides being of the most enduring character in water, when once the plants begin to bloom there is no end to the supply they afford. From one planted out and trained under the ridge where it has a straight run of 20 ft. or so, I believe I am not exaggerating when I say that any time from the end of January up to May I could cut as much as a man could fairly carry. Most of the branches generally range from 2 ft. to 5 ft. or 6 ft. long, laden throughout with lovely-coloured bracts, which, seen under a full play of light above, have a most imposing appearance. The first to bloom is B. speciosa, which is decidedly the most useful of them all, and should have a place in every stove; but where room is limited, the best way is to keep it in a pot, box, or tub, where its roots can be restricted and always under control, as then it is an easy matter to withhold water so as to assist in inducing a thorough ripening of the wood, without which it never flowers in the free manner it is capable of. Planted out it generally grows too rampant and requires much thinning and cutting, but with a limited larder it can be starved into subjection at will and easily kept within bounds. As plenty of light and sun is essential to success in getting this splendid climber to a high state of perfection, the best way to manage it is to train it up with a clear naked stem to the roof of the house, and run its leader along a tightly-strained wire within 9 in. or so of the glass. Any side shoots it may then form should be laid in something after the manner those of a Vine are, and it is on these the flowers appear. In order to give the plant a long season's growth, and afford plenty of time to become thoroughly mature, what pruning it requires ought to be taken in hand directly the leaf-bracts fade, when most of the shoots that have borne them may be cut away, so as to leave room for fresh ones to follow and occupy their places. It generally happens that more of these show than are required, and the best plan is to rub them out at once, especially all such as are strong, and appear likely to take the lead, as they are only robbers, and are generally very shy in blooming. Twiggy shoots, about the size of a straw or less, are the best for this, and such as these should be encouraged till they have attained sufficient length to be serviceable, when, to check further growth, water sparingly till the autumn, at which time the ball of earth may be brought to such a condition of dryness as to induce thorough rest till about Christmas, and then the plant should be gradually started again. Being naturally free-growing, any kind of soil partaking of a fibry, sandy nature, suits to pot it in, but whatever is used should not contain manurial matter, as any stimulant applied during the early stages only forces strong wood, and is only required when the feeding ground becomes exhausted, a time when, if given in the liquid form, it is of much service, and will keep a plant healthy for years. B. glabra, although not so useful as its congener above-named, is a very serviceable variety to succeed it, as it begins to come in just as B. speciosa is fading, and continues to blossom during the whole of the summer months, and, when planted out in a warm house, it may be had even as late as Christmas. The habit of this species is to produce its flowers on the young wood as it grows, and the way, therefore, to manage it is to spur it in in the spring. One advantage in growing B. glabra is that it does not require much heat, as, if kept dry at the root, it will winter safely in the temperature of an ordinary greenhouse, although under such conditions it becomes leafless during the winter. As a pot plant trained on a trellis it is of much value for conservatory decoration and exhibition purposes, and when shown in good condition always has great weight with the judges. Clerodendron Balfourianum is another stove climber of rare merit, good alike for pots or planting out, its branched cymes of creamy-white bracts, with brilliant-coloured, star-like corollas peeping from them, having a most striking and beautiful effect. Plants of this, with plenty of well-ripened wood in them, started now will soon be in flower, or young ones potted or planted out and grown on freely during the summer may be had in fine condition by the autumn. Fibry peat with a good dash of sand and free drainage suits it best, and to ripen the twining shoots which it forms, the way is to gradually withhold water till the leaves flag, and only give just sufficient to prevent them from falling till a month or so of the time they are required in bloom. Trained under the rafters of a stove and allowed to festoon therefrom, Clerodendron Balfourianum forms a fine ornament, and contrasts well with Passiflora princeps, the long racemes of deep crimson flowers of which always command admiration. This is a plant that likes strong heat, and always does best planted out where it can have plenty of root room and a tolerably rich run in which to feed. Like all the Passifloras, it is easily managed and not at all subject to insects of any kind; and, being of a remarkably free-blooming habit, it is one of the most desirable stove climbers than can be grown. A back wall with a trellis or a few wires strained on it is a very good position for it, as, although it thrives best under plenty of sunlight, it will succeed in a more shady situation than either of the foregoing. Another grand subject for cutting from at this season is Euphorbia jacquiniæflora, which, either planted out or grown in large pots and trained within a few inches of the glass, affords an immense quantity of bloom for the flower basket, and does much to brighten up any house in which it may be cultivated. Although the individual blossoms are very small, they are so thickly set, and of such a fiery scarlet colour when exposed to full light as to be very showy, and, with the rich garniture the well-arranged leaves afford, nothing can be more effective as wreaths for ladies' hair, a purpose for which Nature seems to have specially adapted them in every way. If grown in a cool temperature, these flowers last a long time in water, and the plants, after yielding a supply for cutting, break again and send out a succesion on the freshly-formed laterals. To induce them to do this freely, it is well to give them a slight rest by keeping them a little dry at the root for a time, when with slight additional heat, they soon respond and start away freely; and the same should be done again when cuttings are wanted.

Jasminum Sambac fl.-pl. is a capital wall plant that is highly deserving a place in any stove, yielding as it does the most deliciously-fragrant flowers that can be had for bouquet making, and of a size and form just suited for the work. This and Stephanotis floribunda are almost indispensable for the above-named purpose, but the latter, unfortunately, is very subject to mealy bug, an insect that always assails it in the most persistent manner, but now it is known that paraffin will destroy this pest without the least injury to the plant, it will be an easy matter in future to keep it free from its ravages. The best way to grow Stephanotis is to plant it out in a prepared bed, where it can get some bottom-heat, or place it on a large box over hot-water pipes in an angle of the house, from whence it can be run with a single stem to the roof, and there trained in a position where it can have the benefit of the full solar rays to ripen and mature the shoots, on the young ones of which the flowers are produced. Fibry loam, with plenty of drainage is a suitable soil for the Stephanotis, and this should be used in rough, large lumps, in which state it remains more open and lasts in better condition than such as is finer. With the Allamandas, the above are the principal stove climbers that are worth growing, and those last named, like most of the others, must have full exposure to get them to emit their gorgeous flowers, which under a light roof they do in a very free manner. Owing to their naturally strong habit they do not require much root room and generally do best confined in large-sized pots, instead of being planted out, unless they have an unusually large space to cover, and even then it is always advisable to have them somewhat under control. As the blossoms are all made on the young growth, an annual pruning or thinning out is necessary, the time for doing which, should in some measure be regulated by the season they are required to flower. Enforced rest during the winter, by being kept dry, prepares them for the pruning, and if this is done before starting them into growth, by giving water they will not bleed at the wounds. Allamandas always have the best effect with the shoots growing somewhat loosely, as they show their blooms more effectively when hanging down in their own natural way. Strong loam is the soil most suitable, and when in full leafage they cannot well be kept too moist at the root, and if assisted occasionally with liquid manure their foliage will maintain a more pleasing green colour. A. D.

CULTURE AND PROPAGATION OF CHOROZEMAS.

Scarcely any of the Australian plants are brighter, more useful, or more easily cultivated than these Pea-flowered, slender-growing shrubs. Being of free growth, which, when matured by full exposure, is certain to be abundantly floriferous, not much subject to insect attacks, and, thriving as they do in a conservatory where most of the ordinary hard-wooded plants would quickly die, Chorozemas are well worth attention. If, at any time, a specimen becomes leggy, or naked at the base, it may be pruned back, placed in a gentle heat, and it soon breaks into young growth. They are easily propagated from cuttings of half-ripened wood, in sandy soil under a bell-glass in gentle heat, and I have often rooted them without the shelter of the bell-glass. Seeds also, either imported or home-grown, soon vegetate if good, and make pretty little plants. They will succeed either in peat or loam, or in a mixture of the two, with sand added in proportion to the nature of the soil. In the matter of soil for this and many other plants, I think it is not so well to tie ourselves down too tightly to any particular compost, as all of us are more or less influenced by surrounding circumstances. There are many plants usually grown in peat that might be better grown in good loam than in inferior peat; and where the loam is good and the peat inferior or expensive, I should certainly prefer the loam. There are some plants, of course, that cannot be grown and kept in health in loam. Heaths, for instance, and other fine-rooted plants thrive only in peat. But there are a good many different kinds of loam. The best kind for New Holland plants has a bright colour and a soft, silky feel when handled, and if used in a fibrous condition, with sufficient sand added to make the water pass through freely, the growth will be firm and short-jointed, and less likely to run up weakly than when potted in a lighter compost. One of the good qualities of this race of plants is blooming freely in a small state, and their long period of duration. Young plants may be pushed on in spring in an intermediate house or a Vinery at work. All shoots showing a tendency to run away should be pinched back. In this way a good thick base will be made that will in time form a handsome specimen. Some support will be required for the slender shoots as they advance in growth, and there is nothing neater or better than thin deal sticks painted green. These can be made in bad weather, and have a little green paint rubbed over them. Not one more than is necessary to give the requisite support to the plants should be used, as in themselves they constitute no ornament. The plants must not be given too much heat in spring. After pruning, a little warmth and a closer atmosphere will be beneficial for a few weeks, but they should be cooled down early, and be placed in a sheltered situation in the open air early in July, where they may remain till the middle of September. Those plants of such kinds as cordatum splendens, that are started in a little heat in spring, to get the growth made early, will commence to flower in October, and will prove exceedingly valuable and reliable when other flowers are scarce. Any one having a large house to furnish and keep gay in autumn and winter should have at least half-a-dozen good-sized specimens to help out the Chrysanthemums, Salvias, and other plants. The following include some of the best kinds:—cordatum splendens, Lawrenceanum, Henchmanni, and varium nanum. The last is a dwarf kind suitable for a small house. E. Hobday.

A Good Table Plant.—Casuarina ericoides, in Mr. Williams' nursery at Holloway, possesses qualities which render it one of the best of table plants. It is easily grown, of bushy habit, and its graceful, lively green, thread-like leaves make it a desirable plant for vases or for similar uses in the dwelling house. Good plants of it may be grown in 5-in. pots, or large specimens fit for conservatory decoration may be produced in a comparatively short time.—S.

PLANT-COVERED WALLS.

Although the plan recommended by "S" (p. 501) for covering the bare wall of a stove is a very good one, and a quick way of doing it, far better and more permanent results may be attained by building pockets to hold from half-a-peck to a peck or more of soil each. This may be done by using any light, rugged material, such as large pieces of hard locomotive coke or the clinkers from the garden furnaces, or both combined, which any handy bricklayer or man of taste can put together so as to be quite an ornament to any house. The way to set about it is first to get a sufficient number of pieces of ordinary roofing slate, of various sizes, and then rake out a joint of the wall where it is desired to have a pocket, into which the slate can be thrust, so as to form a solid foundation to build on. The best cement to use is the Roman, on account of its quick-setting properties, as within a few minutes it hardens and holds the pieces bedded in it securely in their places. To expedite the work of building, the way to manage is to place all the pieces of slate in the wall at starting, putting them at from something like 18 in. to 2 ft. 6 in. apart in irregular rows, which done, the builder should then stick a piece of clinker at the side of each against the wall, beginning at one end and working on to the others. By so doing, it affords time for each to dry and set, when the same process can be begun again and continued till the whole of the pockets are complete, which, when done, have something the appearance of huge swallows' nests. This is only the foundation, as it were, for the finishing touches have to be put in afterwards by attaching more coke or clinker, as the case may be, to give the whole a more rock-like appearance. To get the pieces to remain in their places till the cement hardens, it is an easy matter to drive a few cast nails in the wall, and run a string from one to the other so as to hold all together where arranged, and this is a great saving of time, but little difficulties of this kind can be met as they present themselves and readily overcome. Towards the top of the wall the pockets should be smaller and more numerous to hold the choicer kinds of Ferns and Mosses, Orchids, Epiphyllums, or anything of that description it is thought desirable to introduce, as there are many plants that do much better grown in this way than in pots, and have a far more natural appearance. This is especially the case with Ferns and more particularly the Gleichenias and the drooping varieties, such as Goniophlebium subpetiolatum, and others of that class, that never show off their full beauty unless in some elevated position where they depend gracefully without being hidden by others. There are many flowering plants, too, of which the same may be said, as for instance, the Æschynanthus, the lovely Epiphyllums, that beautiful winter-flowering subject Centropogon Lucyanus, and many others too numerous to mention. Such as these, associated with Ferns and Lycopodiums, have a fine effect, their bright colours showing up in pleasing contrast with the different shades of green, to which they help to give life and character. Among Orchids the Dendrobiums, Oncidiums, Cattleyas, and others of similar habit and hardiness of constitution may be grown, and with these Anthurium Scherzerianum, so that, with one and the other, a wall converted to such a use is sure to commend itself and command notice. One great advantage in covering walls with imitation rock is that Ferns may be grown in places that would otherwise be bare and unsightly, as, except these, there are few plants that will do under shelves far from light, but that is just the situation where Ferns seem greatly at home, the shade there during the summer exactly suiting their requirements. Being of a moisture-loving nature, it is necessary in building the pockets to make due provision for free drainage, which may be done by leaving holes at the bottom and putting in a few crocks or cinders before filling the spaces with soil. Cork has been brought into notice for making receptacles for Ferns, but it is much more expensive than such as can be formed of clinkers or coke, besides which, when the latter are at all well put together it is in no way equal in effect, while, as to durability, there is no comparison between the two. Such hard materials are imperishable, and improve in appearance by age, as, after a time, Moss and Lichen spring up on it, and it assumes a weather-worn look. To assist in adding to this, it is a good plan to give it a touch over here and there with some of the colours used in paint, such as any of the greens, brown umber, yellow ochre, and the back of the pockets with black, so as to make them look deeper. The above-named dry colours should be mixed with gold size which prevents water having any effect on them, so far at least as regards washing them off. I omitted to add that after the building is satisfactorily completed, the whole of the material used in its construction should be coated over with liquid cement, which not only strengthens it, but is necessary to give it an entire rock-like look. The easiest and best way of putting this on is to mix it to about the consistency of thick whitewash, and then splash it on by means of a new brush, when it will run into all the crevices and effectually hide the joints, if th work be gone over a second or third time, which is genera desirable to give the whole a good finish. S. D

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Plumbago rosea.—For this season of the year this is one of the brightest decorative plants that can be found. It will not do for cutting, as the flowers will not keep above a day or two, but the plants will stand for three weeks or a month in drawing or sitting rooms and continue flowering, provided the temperature does not fall below 40°.—W. W. H.

Abutilons for Winter Flowering.—Those in search of easily-managed winter flowering plants should procure Abutilon Boule de Neige and A. Lemoinei. These two varieties flower the whole winter long in an intermediate temperature and stand a long time in the warmest rooms after being cut; they are therefore also valuable as cut flowers.—W. W.

Zonal Pelargoniums for Winter Flowering.—I have for some time rather looked down upon scarlet Pelargoniums, but I must confess that my opinion concerning them has altered a good deal since I visited the other day the gardens at Narrowater Castle, County Down, where, on the 9th of December, I saw a whole houseful of them, comprising all shades of colour, beautifully grown and flowered. Both trusses and tints seemed to me to be greatly superior to anything which I had seen in summer, at least so I thought. For this superiority I endeavour to account, by supposing that at this season the flowers take longer to open and come to maturity than in summer, and the colours thus become intensified. All that is necessary seems to be, plants grown freely through the summer and not allowed to flower until autumn, housing them in time in a good light house with a free circulation of air, and sufficient warmth to maintain a genial growing temperature. It struck me, in fact, that but little else is required at this dull season besides Zonal Pelargoniums and Chrysanthemums, which are also well grown in the gardens just alluded to.—F. Smith, *Newry*.

Primula sinensis coccinea.—Having received a packet of seed of this Primula in April last, I sowed it and grew the young plants on fast, and now I have some good plants in 5-in. and 6-in. pots, several of them being beautifully in flower. This is the best and brightest Primula I have ever seen, and when put by the side of those strains generally sold as red, the latter wont bear comparison with coccinea. It is really a good Primula, and I would recommend all who have not got it to give it a trial. When it becomes better known it will supersede the old types of red. Another recommendation belonging to it is, it throws its flower trusses well up above the foliage.—J. C. F.

Goold's Chemical Compounds.—Allow me to inform Mr. Culverwell (p. 547) that from careful observation, I find that adding as much of these chemicals as will lie on a two-shilling piece to a gallon of water, has the desired effect, and with a little careful attention, it is astonishing how near one can guess that amount. In the case of robust-growing plants, a little more might be safely added, but I prefer a moderate quantity used oftener.—A. Hossack, *Ragley, Alcester*.

Iris Persica and Reticulata Indoors.—I have found these to do well treated as follows: I put from four to six roots of them in a 5-in. or 6-in. pot in August or September, and plunge them like Hyacinths till they begin to grow; then I put them into a cold pit, giving all the air possible in fine weather, and only keeping them from frost, and just previous to their blooming I bring them into the greenhouse, giving them a good place on a light, airy shelf, where they throw up strong blooms. When out of flower I replace them in the pot, encouraging the foliage so as to keep it green as long as possible. When it shows signs of turning yellow, I gradually withhold water till the soil becomes quite dry, and allow them to remain in the pots till they are wanted to start again.—J. C. F.

THE FRUIT GARDEN.

PROTECTING STRAWBERRY PLANTS IN POTS.

Mr. Simpson (p. 520) appears to have entirely misconstrued the meaning of my remarks upon this subject. I must therefore direct his attention to the following passages, portions of which he has so quoted as to distort their signification. In the first place I observed that I preferred "to place the plants in frames, merely covering them with the lights during heavy rains or in very severe weather;" and, again, "air should never be taken off unless the frost be very penetrating or accompanied by harsh drying winds," as biting drying air playing upon the frozen foliage is apt to cause a considerable amount of injury. It will thus be seen that I did not advocate the entire exclusion of frost; what I did recommend was the sheltering of the plants, especially when not thoroughly well rooted, from extremes of wet and cold, and I think that on this point most growers will be of my opinion. Mr. Simpson cites instances in which plants were not injured by being frozen. I could do that, too, but, at the same time, I have had practical illustration that they may, under certain circumstances, be irretrievably injured. I witnessed a striking instance of this several years ago. At housing time I placed some good plants in frames, the back and front of which were boarded; the soil having given way, there was a passage of air through the frame; a period of severe frost set in, accompanied by a searching drying wind; the pots became frozen through, and the foliage was so shrivelled that the plants did not bear one-half the crop that others did that were better cared for; while, had the frame been close, I am convinced that they would not have suffered much. This is not the only instance that has come under my notice of plants suffering from our icy winds playing continually upon them when in a hard frozen state. The fact is, that a series of mild winters have had the effect of putting many of us off our guard, and, consequently, when an exceptionally severe season comes, a considerable amount of injury is done that might have been easily prevented. Mr. Simpson draws a comparison between plants in the open ground and those in pots, and asks, "Why are not the outdoor plantations injured?" Simply because the conditions under which they are placed are very different from those of plants in pots. During the last severe winter that we experienced, I left some plants in pots out of doors on purpose to give them a trial, and the result was that by February they were killed completely root and leaf, and yet they were standing near outdoor plantations that were not injured. How does Mr. Simpson explain that? Although Strawberry plants form a quantity of fibres near the surface, they send down many feeders deep into the soil, and I cannot quite understand why plants put out in good time should not root deeper than "9 in. to 12 in." I have traced the roots of summer-planted Strawberries fully 2 ft. in depth in the winter, and these are the roots which keep up a flow of sap at all times of the year, and enable the plants to resist the extremes of heat and cold. With respect to two-year-old plants, I can only state that they give fruit equal in quality to young ones; the only difference is that they are more certain to yield a heavier crop. This has been proved here over and over again. Were it not so, they would not be grown, as growing for Covent Garden Market and supplying a gentleman's table are two different matters. Those who grow for profit are very apt to have their wits sharpened and find out that which gives the greatest returns for their labour, and know, when old and young plants have been repeatedly tried, that the balance is greatly in favour of the former. The true test of quality in a fruit is the price it commands in the market, and I have invariably found that that produced by plants two or three years old has realised quite as much as that obtained from young runners. The preference is given to old plants because they never fail in a crop; they yield better, and are, therefore, more profitable; they do not require half the care in the summer, and are more easily managed in the spring. Neither does it matter how hot, dry, or unfavourable the season may be, they may be always relied upon to be of uniform quality. I am not surprised to find that all this is new to Mr. Simpson, who has evidently pursued the old beaten track. It does not, however, follow that this is the best or only sure road, as others, to my certain knowledge, besides myself, have found out. J. Cornhill.

Byfleet.

CLOSE PRUNING BUSH FRUITS.

Many of us must feel indebted to "Cambrian" (p. 471) for his remarks on the pruning of Currants and Gooseberries; nevertheless, I am afraid that all kinds of Currants must not be treated alike; few, for instance would think of pruning Black Currants back to one or two eyes, and throughout my experience of thirty years I have seldom met with any one who would prune Red Currants to one or two eyes. My mode of pruning Red Currants is to leave the leading shoots from 3 in. to 4 in. long, cutting the side shoots so as to leave them about 1 in. long, and in that space I generally find eyes sufficient for a crop to satisfy any one, and as fine in bunch and berry as could be wished for when liberally supplied with manure. As regards Gooseberries, I consider that nearly every variety should be pruned differently; take, for instance, Ironmonger; no one would think of pruning that kind closely who knows how apt the old wood is to go "blind." On that account all the spring wood possible should be retained, allowing room at the same time for plenty of light and air. The side shoots of Warrington, again, require close pruning, and from 4 in. to 5 in. are amply sufficient for the leading shoots, taking into account the drooping tendency of this variety, unless placed on very high stems, when a little more latitude might be allowed. Another variety which requires close pruning, is the yellow sulphur, but, being of a more erect habit than the last, its leading shoots may be left longer. Again, if we take Crown Bob with its long shoots and drooping habit, if not set on high stems, the weight of the crop will bend the shoots down to the ground, and thus spoil the fruit for every purpose. At the same time, this variety does not require close pruning. In this way I might go on enumerating almost any number of Gooseberries, all of which, being of different habits, would require almost in every case, a slight difference in the mode of pruning, but perhaps enough has been said. In regard to the pruning of fruit trees. almost everyone has his way of performing the operation. Here, in East Kent, we have close upon 50 acres, some close-pruned and others growing at random. J. Stewart.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Golden Queen Grape.—Vines of this Grape in pots on their own roots do well with me. Last season I had bunches from 1 lb. to 1½ lb. in weight, of a beautiful golden colour. These won a second prize as new Grapes at the York show, in June, and, strange to say the first prize was awarded to Madresfield Court; therefore, in future, schedules should distinctly state what varieties they consider to be new. I also grafted Golden Queen on Madresfield Court in one of our late houses; it made a capital cane, and this year it bore six bunches of Grapes. All went right until colouring commenced, when, instead of becoming golden, it began to spot and shrivel, so much so as to be useless, thus showing, according to my opinion, the stock to be an unsuitable one; and, in order to strengthen my views in this matter, I may mention that Mr. Wilson, gardener to Lord Lindsay, Uppington, planted it out direct from the pot in which it was received, and is rewarded with grand bunches, free from spot, as yellow as gold, and in every way satisfactory. I therefore say, grow it on its own roots, and I feel sure that there will be no disappointment.—R. Gilbert, *Burghley.*

The Black Hamburgh as a Late Grape at Trentham.—Without in any way detracting from Mr. Stevens' skill as a Grape grower (which it would be invidious to attempt to do), I think it should be generally known that the soil at Trentham, being as it is on the red sandstone formation, is very favourable to the Hamburgh Grape; hence, partly, its keeping qualities there, as mentioned by Mr. Bolas (p. 521). My object in mentioning this is merely to prevent disappointment on the part of those who might be disposed to expect similar results in all cases. Most cultivators who have practised on various soils will, like myself, have often remarked how much better Grapes generally keep when grown on some soils than on others, all other items in their culture being equal. I have more than once seen Hamburgh Grapes grown in soil on the sandstone formation keep plump and sound until December, under ordinary treatment, while, on the other hand I have known able Grape growers not so fortunately situated as to soil try all in their power to keep them until that time and fail; and yet an ordinary observer might not have seen much difference in the fruit in the two cases, say when just ripe in September. From careful observation on this point I have always found that Hamburgh Grapes grown on the chalk and light limestone formation keep the worst. The berries individually do not seem to be so firm and pulpy as when grown on stiffer soils, though the general finish is often better.—H. J. Clayton, *Grimston.*

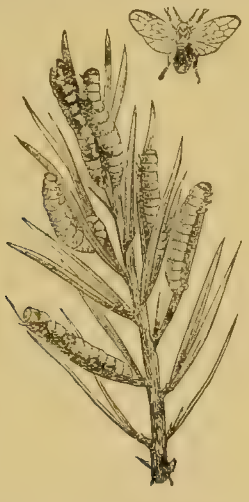
Winter Nelis Pear.—Those who are desirous of having a really good Pear to come into use at Christmas will find this variety second to none. It has always been spoken of as the best Pear sent in for dessert in every place in which I have been. Some fine specimens of it, imported from California, may now be seen in Covent Garden Market. The tree forms a handsome, small pyramid, is quite hardy, and an excellent bearer.—D. S. Gillett, *Weybridge.*

GARDEN DESTROYERS.

THE LIGHT-COLOURED PINE SAW FLY.

(LOPHYRUS PALLIDUS.)

This saw fly, when in the caterpillar or grub state, does much injury to our Coniferæ by eating the leaves of the young shoots and gnawing deep grooves in the young wood. As they are generally found together in families of from twenty to fifty individuals, it can easily be imagined that when a tree is infested by several of these families, particularly if the tree is a specimen one, it is much injured by them. The best means of destroying this insect, is by laying a sheet or white cloth under the branches on which the caterpillars are feeding and shaking them well, when the caterpillars will fall off and can be easily destroyed. If the trees are quite small, they can be picked off by hand. They are, fortunately, very subject to the attacks of several kinds of ichneumons, some species of which deposit their eggs in those of the sawfly, some in the caterpillars, and others in the chrysalis. All insectiverous birds prey upon them, so that their natural enemies reduce the numbers which attain maturity very considerably. The perfect insects are frequently found in June and July, on and flying around various Fir trees, and should always be destroyed. They make their first appearance in June, and soon afterwards begin to lay their eggs in the leaves of Fir trees. The females are furnished with a short but very curiously made ovipositor, very similar to that of the Rose saw fly described in a previous article on that insect, as an instrument formed of two toothed plates with which, by a rapid and alternating movement of the plates, the female can very easily make an incision in a leaf or tender shrub. In this slit she deposits an egg which, passing between the two saws, is thus directed into its resting place; with each egg is deposited a drop of a frothy liquid, which, it is supposed, keeps the edges of the slit from closing; the slit is said to increase in size as the egg grows, which Reaumur states is the case, the egg, in some unknown manner, deriving nutriment from the juices of the leaf. In the course of a fortnight or three weeks the eggs hatch, and the caterpillars spread themselves over the surrouding leaves. These false caterpillars very much resemble, and are often mistaken for, the true caterpillars of butterflies or moths, but, with a little care, they can always be distinguished from them, for the false caterpillar of this species has eleven pairs of legs, whilst no true caterpillars have more than eight pairs. The heads of the latter are nearly always heart-shaped, whilst those of the former are round; they emit from their mouths, when touched, a drop of fluid having a resinous smell. They attain their full growth towards the end of August or the beginning of September; they then spin amongst the leaves where they have been feeding a small oval cocoon, in which they pass the winter, and in which, in the following spring, they assume the chrysalis state. Dr. Leach found that one of these caterpillars remained unchanged in its cocoon for two years, but this, I imagine, was a very unusual circumstance. The saw flies leave their cocoons in June; the males differ considerably from the females both in size and colour; the former measure about 6-10ths of an inch across the wings when they are fully expanded, and are black, with the front margin of the thorax and the legs yellow; the antennæ are deeply toothed on both sides; the body is reddish-brown beneath. The females are somewhat larger than the males, and their colour is pale yellow with several reddish-brown transverse bands on the body; their antennæ are not nearly so deeply toothed as those of the males, and they are furnished at the apex of their bodies with the above-mentioned ovipositors. In both sexes the wings are transparent, but very much veined. The larvæ are about 7-10ths of an inch long when full-grown, and of a pale green or yellow colour. Some have three darker longitudinal lines, one down the back and one on either side. Their bodies consist of twelve joints, not including the head, which is reddish-brown; each joint bears a pair of legs, with the exception of the fourth. The cocoon is oval and of a grey colour; it is very small in comparison with the grub, which is obliged to lie within it in a curved position. S. G. S.



Lophyrus (Tenthredo) pallidus.

Marl as a Cultural Agent—I was informed by an advanced cultivator some years ago that nothing refused to grow in marl. Since then I have verified the remark as being applicable to many plants. I have used it extensively in young shrubberies with forest trees, choice Coniferæ, stone fruits of all kinds, Pears, and Strawberries in pots, with advantage. Where such soil abounds, it would be found to act as an excellent dressing for old gardens which have been heavily manured. Fruits and vegetables alike would benefit from such material. Where such can be procured in quantity, it may be turned to good account by being spread over the surface of vacant plots, and afterwards dug in. When Melon soil is light marl will be found most serviceable when mixed in moderate proportion, well mixing the two together. I have not tried it for Vines, but intend making the experiment with some in pots. I suppose its action in a Vinery would be similar to that of burnt earth, which is known to suit Vines well when mixed in the borders. For Peaches it suits admirably. Two years ago (August 20) we planted two small Peach houses with suitable kinds for early and mid-season work, the plants being kept in pots till the structures were glazed, and having anything but proper treatment. A quantity of marl, lime rubbish, and bones (the latter in small proportion) was mixed with the soil, which was of very inferior quality. The trees made good root action in the border, which had been rammed very firm, but little growth was made in the branches. The following July about two dozen fruits were taken off each tree; in August, while the foliage was green and growth going on, the trees were well trimmed in and the roots half lifted. Some of them were nearly entirely lifted, and, of course, speedily replanted. No more growth was made by the shoots, which became very hard and red in colour. This season we took out of the same house 330 capital fruit within the year, and ten months from planting. The house is 33 ft. long, and the back wall and front trellis are covered with fine wood. The second house is similar to the other; it was cropped about the same as the first last year, but only 250 were taken off the trees this season; and we find that, as soon as the crop is all gathered, a number of roots will require lifting, to stop the vigour of the trees. The fibrous roots are all over the soil, a few inches from the surface, and are easily manipulated on. We never saw Strawberries in pots fruit better than when, last season, the plants were potted with a mixture of marl in the soil (which was of a very bad quality). The kinds of Strawberries which did so well were Vicomtesse Héricart de Thury as first crop, Sir Harry as second, and Oxonian as last. All the kinds were much larger than in the open ground. They kept wonderfully free from insects, and set freely in great quantity. The Oxonian grew to a large size, some berries measuring over 6 in. by 4½ in. in circumference. —M. T.

Polemonium cœruleum variegatum with White Flowers—It would appear that there are two forms of this Polemonium, as some of the plants of it which I have have produced white flowers, the native variety being blue-flowered. The white-flowered sort is, of course, merely a variety of the blue kind.—R. P. Brotherston, *Tynninghame.*

THE FLOWER GARDEN.

LILIUM AURATUM AT HOME.

Perhaps a few words from one who has recently visited Japan may be of interest to those who asked for information about the habitat and growth of this Lily in its native country. Lilium auratum is found in great abundance on the steep, partially-wooded hill-sides that form the flanks of the well-known volcanic mountain Fuziyama, and in smaller quantities throughout the district generally. The soil that covers to a varying depth the crumbling igneous rocks, consists of decomposed leaf-mould, mixed largely with the detritus of this volcanic rock, that sparkles with particles of mica, and is excessively porous and friable. This Lily, then, grows on hill-sides where there is perfect drainage, with a soil free from lime, in a climate that is both hotter and wetter than our own in summer, and is in winter dry and bright, with occasional sharp frosts of a few days duration. To imitate this in our climate, we must provide it with soil as warm and well drained as possible, and in summer (if the weather be hot and dry) supply it copiously with water that has been well aired and the chill taken off it, as sudden changes of temperature are most fatal, as will be inferred below. Another point to be noticed is that this Lily abounds at the edges of woods, where the dwarf Bamboo, that in Japan takes the place of Grass, effectually shields the stem and roots from the sun's rays, while the upper part of the stem with the broadest leaves rejoices in full sunshine. Sunstroke at the base of the stem is a fertile source of disappointment, and for this reason Lilies planted among Rhododendrons succeed so well in warm localities in this country. Another and frequent cause of failure arises from the bad treatment of the bulbs by the Japanese, who are in the habit of taking them up, and exposing them to the sun and air for ten days or a fortnight before packing them for exportation, a practice against which "Dunedin" has rightly remonstrated as being most injurious.

The drying up of the sap in the scales and consequent exhaustion of the bulb's vital power is the real cause of the "mop-like growth of stem roots" so often seen in late-potted bulbs that have been recently imported; because the base from whence the roots proceed has become so dried up as to be unable to push new roots. The stem in spring, when it begins to rise soon exhausts the bulb on which it feeds, and so pushes out stem roots to supply its growing wants; and it seems true that stem roots do not strengthen the bulb to any appreciable extent in storing up strength for another season, for on being taken up it is found to have dwindled to a mere nothing, not because of the stem roots, but because it lacked roots of its own. They are Nature's effort to help the stem to perfect flower and seed before death, and are the result rather than the cause of weakness and death. On healthy plants in their own country they are present to a moderate degree, and serve, probably, to strengthen the stem and prevent it from being twisted off by wind when top-heavy with its magnificent flowers; and it will never be found that a really healthy bulb, provided with abundant roots of its own pushes stem roots in any quantity. I should hardly recommend the practice of cutting off the stem roots for the reasons I have given, and it is evident that unsuitable soil will, by its coldness and wetness, destroy the bulb roots, and cause a great growth of stem roots in the same way that exposure to the air does. It may, however, be worth mentioning in case some do not know it, that the stem of the seeding Lily may be cut off below the stem roots without apparent injury to the seeds, and the bulb, thus deprived of its load, may be potted or replanted before the autumn roots (which are most valuable) have pushed. The top must, of course, be transplanted with the greatest care if perfect seeds are wished for, and if successfully performed, it will never flag, and will, in a warm autumn perfect some small offsets as well as seeds.

In Japan just now the thirst for change and improvement is even greater than in Europe, and some of the best exporters of wild or cultivated Lilies, now dip each bulb in a bucket of clay and water, "thick and slab," until by repeated coats of mud the bulb is guarded from the direct action of the air. This is a great improvement, and with proper cultivation in warm soils, it is to be hoped that the number of failures in the management of this Lily will be lessened; but in truth it is not of as hardy a constitution as many, and in cold soils and situations it is best under glass. E. H. W.

SCALES AND STEM ROOTS OF LILIES.

"Dunedin" asserts (p. 507) that the scales of imported bulbs of Lilium auratum are dead when received in this country from Japan, and then he goes on to say that the "cell walls which make up the tissue or fabric of the bulb remain unaltered, and perform some offices long after life has departed." This, I am sure, will be a surprising statement to many, more especially to those who have successfully used the scales of such old bulbs for propagating purposes. I once saw half a basketful of the imported bulbs of L. auratum which had lain all winter in a shed, and which had during that time fallen to pieces, start into growth in the spring, nearly every detached scale bearing one or more leafy bulblets. The fact is that the old scales of Lily bulbs which have flowered are not dead, any more than the old pseudo-bulbs of Orchids are dead after flowering. They may not bloom again, but they have still offices to perform, and that is the reason why Nature so persistently retains them alive. We are told that the scales of a Lily bulb that has flowered are virtually dead soon afterwards, but how about the bulbs which produce stems that do not bloom? Surely, if the mere process of flowering is so exhaustive, we ought to have conservation of energy in bulbs of the latter class, and that that is so the Dutch system of cultivating Hyacinth and other bulbs, for sale or exhibition purposes, fairly proves a system in which energy is fostered and conserved until wanted. Hence I willingly admit that flowering weakens the old bulb generally, and should the bulbs be starved in poor soil, and their roots be cramped in small pots, such bulbs may die, but I am fairly convinced that the scales of a well fed flowering bulb do not die as stated by "Dunedin"; indeed, as I have before stated, they may be used for propagating purposes with success.

I totally disagree with "Dunedin" with regard to stem roots and their functions. That they are not analogous to stem roots on forced Grape Vines is admitted, since we are told they ran down inside the pots, "completely exhausting the soil," and that is a proof that they absorb nutriment exactly like the bulb roots. If we could see L. auratum and L. lancifolium growing in their natural habitat, I have no doubt there are conditions which render stem roots helpful and desirable to them, even although other species, growing under other conditions, may not thus require them. How has "Dunedin" (p. 508) proved that "secondary roots are composed of a different tissue or organisation of parts, and that their absorbing powers are of a totally different character from ordinary roots? and, moreover, that the sap drawn up by stem roots has no assimilated flower nourishment in it?" This is a startling assertion, the confirmation of which is yet wanting. As to the "assimilated flower nourishment," surely "Dunedin" is aware that no root, of whatever description, ever yet drew up sap or nutriment, from air or soil, having any assimilated flower nourishment in it, seeing that the assimilating part of the business is invariably carried on by means of the leaves or their representatives, so that whatever is absorbed by roots of any kind must pass through the leaf tissues of the plant ere it can in any way become assimilated.

I quite agree with Mr. Baines, that the growth of Lily bulbs is, in plan, like that of all other true bulbs. What "Dunedin" calls a seed bud is simply the growing point, one or more of which every bulb and every other plant must needs possess.

F. W. B.

—— "Dunedin" (p. 508) seems to have quite missed the drift of my argument (p. 460-1) for he deprecates the introduction of extraneous matter and expresses a desire that I will in future limit myself to specific questions, and above all, state whether I am a believer in his successional bulb theory or not. I thought I had sufficiently indicated my position in regard to this latter question, but, for "Dunedin's" satisfaction permit me to say that I am a believer in the successional bulb theory which he advocates. With regard to the first part of "Dunedin's" remarks, I have again perused my letter (p. 460-1) but must say that I fail to see wherein I have wandered from the subject as he suggests. The point which I there endeavoured to urge was, that it is not by chance that some Lilies have stem roots and others have none, and that there must be surely some wise reason for their possession by some species, and their non-possession by others, and some good end to be gained by the proper utilisation of these stem roots, and my object was to elicit, if possible, some information of a positive character from "Dunedin" as to their proper position in the economy of the Lily. So far, however, "Dunedin" has only vouchsafed to us negative replies on this point. He says in effect, that these stem roots do the bulb no good whatever, and that they do not secrete any flower-nourishing juices. Then what do they do? They cannot be there for no purpose whatever, and therefore I shall be glad if, with a view to elucidate this problem, "Dunedin" will, at his convenience, let us have his replies to the following specific questions:—

1. If stem roots, when they occur in Lilies, do not assist in nourishing the flowers, what do they nourish?

2. As it is not probable that the sap which they secrete descends before being utilised, and, as it can hardly be supposed that such sap is altogether useless, and further, as "Dunedin" asserts that it cannot, from its composition, nourish the flowers, will he say whether it is the stem or the leaves, or both, that are nourished by these stem roots?

3. If it is the stem and leaves that they nourish, is it not evident that if we throw the burden of them, as "Dunedin" counsels us to do, upon the bulb and its roots, we must do so at the expense of the flowers, or the successional bulb, or both?

4. If, as "Dunedin" states in reply to "London Stone," his method encourages the growth of bottom root offsets and small bulbules (these latter I understand to be the bud-bulbs which sometimes grow at the junction of the leaves with the stem) must their production not throw a further strain on the bulb and its roots, and also, therefore, be at the expense of the flowers, or the successional bulb, or of them both?

In speaking of stem roots, it must be understood that I mean those that are the outcome of natural growth. I am quite prepared to admit that by injudicious overfeeding they may be made to become a source of danger to the plant; that is an error in one extreme, but I hold that "Dunedin's" remedy is an error just as far in the opposite direction. The position which he occupies in this matter appears to me to be this: He has been subjecting L. auratum and speciosum to the conditions of culture which suit L. candidum and other non-possessors of stem roots, and under such conditions he finds the stem roots positively harmful, and looks "upon them as his greatest enemies." From this result he argues that these stem roots are a mistake and should not be there at all, and forthwith he proceeds to remove them most effectually by scraping the stem. His facts may be right enough, but I submit that his deductions from them are erroneous, for, to my mind, this result of his simply shows that he has not been treating L. auratum and speciosum as they should be treated. We all know that by certain treatment an Apple tree may be induced to run all to wood, and consequently produce no fruit; but that is not surely the fault of the Apple tree, but of the treatment. So I take it, if a certain treatment be found, as "Dunedin" maintains, to encourage the growth of these stem roots to such an extent as to be detrimental to the bulb, it is the treatment we must condemn, and the proper remedy must be not the cutting off of the stem roots but an alteration of the treatment. I venture to predict that, when the true method of treatment is worked out, these same stem roots which "Dunedin" at present looks upon as his greatest enemies he will acknowledge to be his greatest friends in the cultivation of these particular species of Lilies. The large bulb which "J. S. W." mentions (p. 461) I am sure was not systematically deprived of its stem roots, as "Dunedin" advocates.

A. S. O. N.

—— When "Dunedin" has shewn us specimens grown according to his view which surpass all those that have ever been seen before, I shall begin to think, and not till then, that we Lily growers are on the wrong track. I shall, however, require better argument than any "Dunedin" has yet adduced, before I commence to cut off even the stem roots of a Lily. If they are useless, why are they produced? Some Lilies form stem roots and others do not, but for my part I should always rejoice to see a pot well filled with healthy roots, let them come from where they like, and when I saw them crawling over the sides of the pot, and through the bottom, I should simply regard it as an eloquent sign that the pot was too small, and act accordingly. Will "Dunedin" kindly say whether it is a fact that the most vigorous-growing and largest-flowering Lilies produce the greatest number of stem roots, and whether the contrary is the case as natural vigour decreases and the flowers diminish in size, and if that be so, why? also, if it be equally a fact that the smaller-growing and smaller-flowering species, and those producing the smallest number, or no stem roots at all, go soonest to rest, and *vice versa*. To my mind, looking at the matter from Dame Nature's point of view, the answer is very simple, but what says "Dunedin?"

Newry. T. Smith.

—— "Dunedin's" views regarding Lily growth are sometimes opposed to the practice by which the most successful cultivators have attained the best results. Before attempting to persuade Lily growers that large bulbs are not better than small ones, that destroying the stem roots in the case of such Lilies as form these will strengthen the bulbs, and that it is better to pot or transplant before the leaves are dead and have fulfilled the office which Nature has assigned them, why did not "Dunedin" take the course usually pursued, viz., that of giving us the benefit of his experience by letting us see the results of his treatment? There are many and various opportunities of doing this, and a single practical illustration, exemplified by his showing better grown Lilies under the course of treatment which he advocates than others have been able to produce by the old system, would have done more to convince us of the soundness of his practice than all the assertions that he has made. We live in an age when people believe much more in what they see than in what they hear. If "Dunedin's" assumptions respecting the nature of Lilies be correct, then the practice of those who have hitherto grown these plants must be wrong. But, to prove this, something is required stronger than mere opinions. In common with most other plants that I have grown I have, at one time or other, tried experiments with as many of the best kinds of Lilies as it occurred to me there was anything to be learned by, and amongst them was the removal of the stem roots of such as I grew in pots, both by planting so near the surface as to leave little room for the development of stem roots, and also by their actual removal as soon as they appeared. When the bulbs, too, were put in deeply, I have removed the whole of the stem roots, and the result of this treatment enables me to give unhesitating contradiction to this last of "Dunedin's" teachings, for the bulbs so disrooted neither produced the same quantity of flowers nor increased in size or in numbers by division, as plants of the same varieties similarly managed in every way, except that all the roots possible for 6 in. or 8 in. above the bulbs up the stems were freely encouraged. In answering "London Stone" (p. 508) "Dunedin" effectually demolishes the argument which he previously on the same page had set up against me; here are his words:—"It is thus that Nature has decreed, that as soon as the bloom is over, all nourishing connection between the bulbs and the stem must cease. As regards the stem, that would be left standing; it would have gone on keeping green for some weeks longer, its nourishment being supplied by its own stem roots." Further on he says, "green leaves on the stem are no proof whatever that vitality exists between the bulb and the stem." In his reply to "London Stone" he says:—"As to seeding, I leave that to the trade, for this reason, that the new or successional bulb gains in strength and size by not allowing the plant to run to seed." Now, if, as "Dunedin" in the previous breath says, "green leaves on the stem are no proof whatever that vitality exists between the bulb and the stem," how does he reconcile that statement with his immediately following assertion that the bulb is injured by allowing the stem to produce seed. If, in attempting to disprove what I maintain, viz., that the bulb is benefited by the presence of the leaves so long as these have life in them, "Dunedin" asserts that there is no vital connection at this time between the stem and the bulb, how can the latter be injured by the production of seed which necessarily takes place subsequent to blooming? "Dunedin" says if I had "carefully examined" the stem at its junction with the bulb, I should have found it much contracted and dried up, compared with what it was above ground. The stem of any Lily is, during the whole period of its existence, much more contracted, or thinner at the base than above ground, and I have, with a view to ascertain their condition, actually severed the stems of L. auratum and others, two months after the flowering was over, after the leaves had fallen, but when the stems were still green above, and I have found them fresh and quite alive down to the junction, thus directly disproving what "Dunedin" asserts. He also speaks of the structural formation of Lilies, and tells us that a medium-sized Lilium auratum contains not less than 300,000,000 cells. To test the truth of this statement, I have to-day taken some sections from the scales of a good-sized bulb of this Lily, mounted and examined them carefully under the microscope, and I find that so far from "Dunedin" being correct in his assertion, it would take nearer half-a-peck than a single bulb to supply the number which he mentions. These Lilies, like most other soft, quick-growing vegetable forms, have much larger and consequently, fewer cells, compared with their bulk than hard-wooded, slow-growing plants generally. But what has the structural details of these plants with which "Dunedin" favours us, to do with the question which strictly bears upon cultivation and nothing else? "Dunedin" has, however, brought to light one good point, namely, the advisability of moving Lilies when most at rest, a practice which I have always urged in all I have ever written connected with their treatment. T. Baines.

—— "Dunedin's" views on the stem roots and practice of not cutting down Lilies after flowering are so entirely opposed to long experience and practice, that I should like to ask him, as he invites us to do, a question or two. He says some species throw out stem roots, others do not, but he opposes the encouragement of all stem roots. Will he have us believe that Nature throws out stem roots, not only without any good purpose to serve, but for no purpose at all? As to cutting or not cutting down the stem immediately after flowering, he says (p. 508) that as soon as the flowers have faded, the roots and scales of the old bulb will be found to be dead or dying, and that there is an entire absence of sap in the stem, but he subsequently adds that the new or successional bulb gains in strength and size by not allowing the plant to run to seed. Now this appears to me to be contradictory; one statement requires to be reconciled with the other. E. B.

—— After a careful consideration of "Dunedin's" last contribution (p. 508), I fail to see anything in it that supports his statements as to the injurious effect of stem roots on Lilium auratum, nor can I see the applicability of the 6-in. pots, as I stated that my Lilies were grown in boxes 15 in. deep. I should consider, even in the case quoted, that the small size of the bulb was owing to the short supply of food, and that the stem roots "being unable to elaborate flower nourishment" (p. 508), must possess most mysterious powers, for while in one place "Dunedin" denies their power of preparing sap, in another he gives a long account of their voracity, carried by them to the extent of sucking the sap from new bulbs. What, then, becomes of the sap? As to my statement "that the mop-like growth of the stem roots forms an admirable protection to the bulb" being "mere theory," why it must be patent to any one that a mass of fibres is a protection to the bulb beneath it, and, furthermore, that when the fibres decay, they must furnish food for the stool roots when carried down by the spring rains. And as at p. 113, Vol. II., Dr. Wallace states that the stem roots are sufficient in a healthy plant to enable it to flower vigorously, even after the bulb has been removed, I can only repeat that "Dunedin's" positive statement of their evil effects is "mere theory," and as unfortunate as his comparison of them to suckers from the stock of grafted Roses (p. 371)—"Rose growers wage war against suckers coming up; Lily growers should wage war against suckers going down."

London Stone.

—— "J. S. W." (p. 538) may rest assured that I had no intention of leading him into any discussion on the "perennial theory," as there is no room for that. There is, however, plenty of room for his making experiments, in order to prove whether I am right or wrong. Had he done so, and made himself thoroughly acquainted with the organic structure and constitution of the bulbs, he would never have put such questions to me as he has done, as there is no such thing as a three-year-old bulb or a one-year-old flowering bulb, the term of the Lily's existence being only two years, when, having bloomed, it dies; and a one-year-old bulb must go on growing for another year before it is destined to bloom. Dunedin.

PLATE CLVI.

THE DOUBLE SCARLET AVENS.

(GEUM COCCINEUM FL.-PL.)

It is singular that in such a large genus as Geum that so few kinds produce flowers of sufficient merit to entitle them to be classed amongst garden plants; indeed, the subject of our coloured plate this week is the only showy kind belonging to the true genus. The scarlet Avens, which inhabits the Bithynian Mount Olympus, has long been a popular garden favourite, and probably the Chilian Avens (G. chilense) is but a mere geographical form of it, only differing in the darker colour of the blossoms, which sometimes assume a coppery hue. The double variety is a far more valuable kind than the type, as its blossoms last much longer in perfection, and are very suitable for cutting. It commences to flower in May, and produces a continuous succession of blossoms till October. There are several forms of the double kind; in some the flowers are as double as in the best sorts of Pelargoniums whilst the inferior forms scarcely show any duplicity. It is one of the most easily managed of hardy perennials; we have seen it growing vigorously in ordinary garden soil, and it may be readily multiplied by seeds, which are freely produced, or by division, which should be done in spring. The most desirable of the other kinds in cultivation are:—

Mountain Avens (G. montanum—syn., Sieversia), of dwarf, tufted habit, with deeply lobed leaves. The flowers are large, of a yellow colour, and are borne singly on erect stalks about 1 ft. high. It inhabits high mountain pastures in various parts of Central Europe.

Creeping Avens (G. reptans—syn., Sieversia) is a trailing kind with deeply-cut foliage and erect flower stalks about 6 in. high, bearing a single blossom of the same colour, but larger than the preceding. It also inhabits the European Alps.

Three-flowered Avens (G. triflorum—Sieversia).—This very distinct kind has deeply-incised root leaves, the segments of which are also toothed. The flowers are usually borne in clusters of three, hence its name. They are rather large, reddish-purple outside, and white tinged with purple within. It is found in rocky places in various parts of North America. It was introduced about fifty years ago, but is not so common now as it should be.

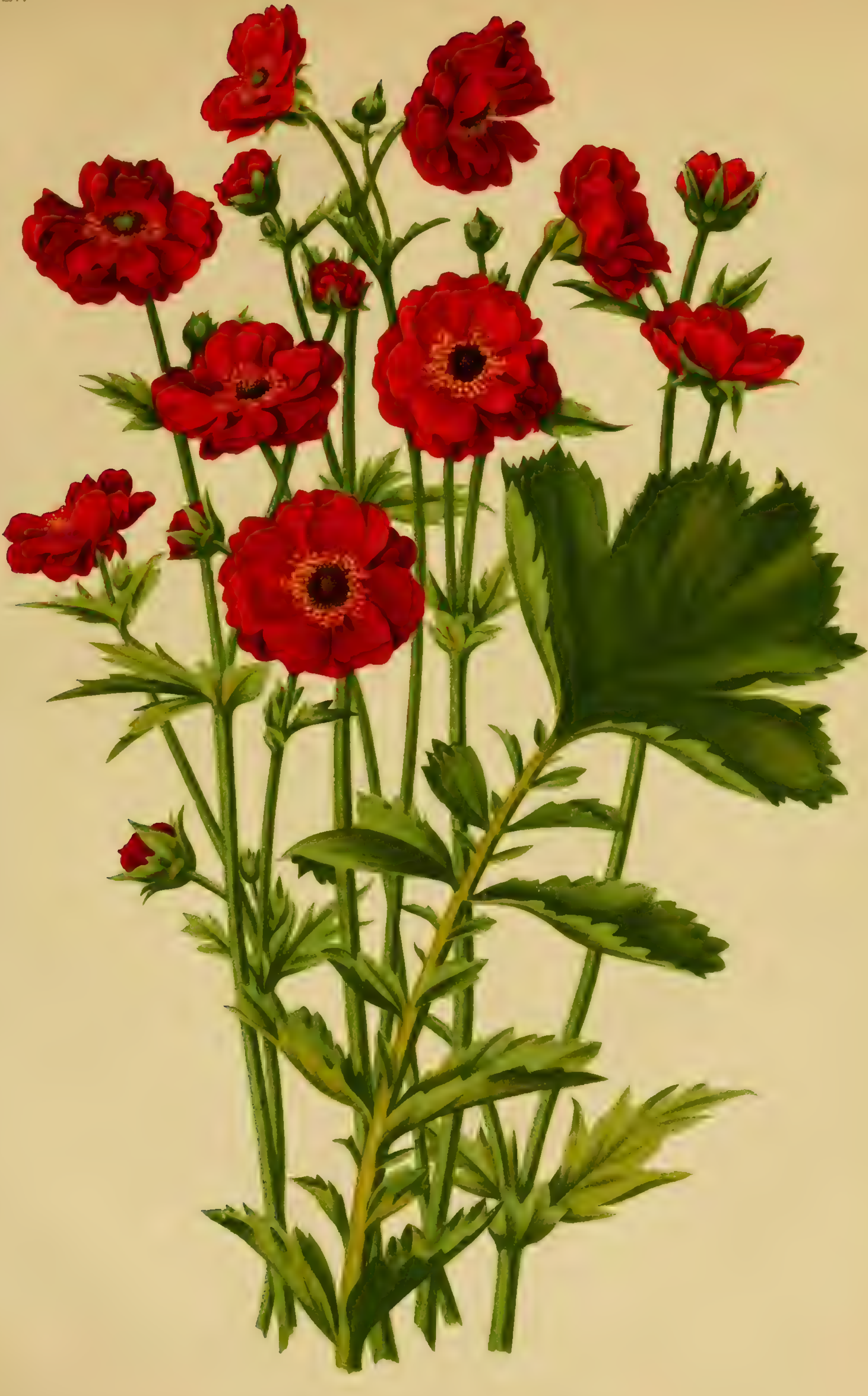
Amongst the fine kinds which are not as yet in cultivation in this country may be mentioned the beautiful little Icy Avens (G. glaciale), which is found in Siberia, principally on the Alps at the mouth of the River Hena. It is a very dwarf kind, about 1 in. or so above the surface, and is densely covered with a short, yellowish pubescence. The blossoms are yellow, and as large as those of any of the Geums. When introduced, this charming Alpine plant will make a desirable addition to our gardens.

Peck's Avens (G. Pecki—Sieversia).—This is another North American kind, with divided leaves and yellow flowers about the same size as the Mountain Avens.

Tall Avens (G. elatum) is a native of Nepaul, and has divided leaves, with from four to six pairs of leaflets. The flower stems are 6 in. high, and three to four-flowered, and the blossoms are of a yellow colour. W.

[The flowers, from which our figure was prepared, were supplied by Mr. Ware, of the Hale Farm Nurseries, Tottenham.]

Michaelmas Daisies.—Any one making a plantation of Michaelmas Daisies will do well to plant the three here named, viz., Aster linifolius, A. longifolius, and A. Amellus; they flower in the order named, and 5° of frost does not discolour the flowers. These three



kinds were sent me from Mr. Parker, and are certainly the most distinct and useful. Everybody who has seen them this year has been delighted with them. These Asters are fine when allowed to grow into large clumps, forming the centres of large beds or angles of beds or borders. A dwarf kind is A. discolor, and, although insignificant in colour, I am beginning to fancy it, for it is still in flower and good, and when other flowers are *nil* its funny, old-fashioned, spotted-muslin-look arouses one's attention and sympathy. Well, then, I would say to every lover of hardy plants, plant them in your next arrangement of the flower garden, and you will not begrudge the price of the plants. What Pyrethrums are in early summer these are late in autumn, most beautiful and valuable to the flower gardener.—H. Knight, *Floors.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Helianthus divaricatus.—Did "G. T." (p. 452) ever see this in perfection? If so, he would have to go far to see a finer effect than it produced. I do not think I ever saw anything more striking than a group of this plant growing in a favourable position. In the southern part of Massachusetts, near Rochester, there is a small, shallow, semi-circular pond or bog along the side of the road, perhaps 50 ft. long. 4 ft. or 5 ft. from the edge, just far enough up the rising ground to be out of the way of excessive moisture; this pond is encircled with a plantation of Helianthus divaricatus, about 3 ft. wide, and last September, when I saw it backed up by a thick growth of Vaccinium Prinos, &c., it was one glowing mass of flower of the most brilliant golden-yellow, certainly exceeding any display I ever recollect seeing in any garden. The blossoms might have been counted by thousands, and were thrown well up on stems above the foliage 2 ft. to 4 ft from the ground; they formed a mass which was truly grand.—C. M. Hovey, *Boston.*

Cannas Out-of-doors in Winter.—In Mr. Cornhill's interesting article on Cannas, he expresses doubt whether, after the second year, Cannas would not require lifting and replanting, but he gives no reason for this view. Is it not a fact that the fine specimens of Cannas at Battersea Park have remained unmoved for many years? At present, my experience does not carry me over the second year, but there is no doubt in my mind as to the hardiness of the roots, if the bed be properly prepared, and a heavy mulching be given for protection from frost. The ground requires very good and careful draining, and the bed ought, as Mr. Cornhill says, to be raised considerably above the ordinary level. With these precautions it will be found that Cannas may be wintered in the border with perfect safety. These remarks apply only to the green-leaved kinds; some of the bronze-coloured sorts seem unable to withstand a cold, wet winter, such as that of 1877-78. My experiments have been tried in a cold, clay soil and bleak situation, and the growth has been magnificent.—A. K., *Eastcott Cottage, Pinner.*

—— It is a matter of some surprise that Cannas are not more largely cultivated than they are, as I quite agree with Mr. J. Cornhill that they are not at all difficult to cultivate. In fact, they are the most easily managed of all our flower garden plants. It is not necessary to have a hotbed on which to start them, as they will begin to grow quite freely in a Vinery or in any warm house. I grow a large quantity of them, and, being somewhat limited for room, my plan is to place the roots on the Vine border close to the pipes. We place them as closely together as possible, but do not cover them with anything; they start very rapidly, and when sufficiently advanced, we divide them into small pieces, and pot them in 3-in. pots. We replace them in the Vinery for a week or two, then harden them off, and plant them out at the usual time. I have tried leaving them in the borders all winter, but they do not succeed any better than those planted out early in summer. One objection to leaving them out is that if the spring be mild they start very early into growth, and, as a slight frost will discolour the leaves, they afterwards present an unsightly appearance. They may be wintered in any shed where frost does not get at them. Indeed, in this respect, they are much easier kept than Dahlias.—H. Hamill, *Hound House, Guildford.*

Japanese Primroses Out-of-doors.—The Japanese Primroses referred to as growing out-of-doors in Mr. Nelson's garden, were the varieties of Primula cortusoides amœna and not P. japonica, which, however, is, I believe, hardy in many soils. Is Mr. Fish's too light for it.—Primula.

Aquilegia cœrulea hybrida.—This fine hybrid, raised by Mr. Douglas, Loxford Hall, is the result of a cross between A. cœrulea and A. chrysantha. It is exactly intermediate between the parents, the centre petals being clear sulphur yellow, and the spurs and sepals pale blue. The flowers are large and open well.—W.

GARDENING FOR THE WEEK.

Flower Garden.

Protecting Roses on Walls.—The series of mild winters that we have now had for some time is apt to throw even growers who have had some experience off their guard, and there is no doubt, from the very great increase of late years in the cultivation of Tea and Noisette Hybrid Roses, that there are great numbers of plants in most parts of the country which have attained a considerable size through having escaped the scathing effects of a severe winter, and even the destruction of their tops down to the ground level would be a severe disappointment, and cause many unsightly blanks; and, as we cannot look forward to an uninterrupted continuance of these mild winters, a little forethought in providing some slight protecting material may save many specimens upon which much store is set, especially in prominent positions on walls where their loss would be the most conspicuous. It is the more desirable to do this on account of the comparatively small amount of protection that often makes the difference between destruction and complete preservation. Many contrivances may be resorted to to afford the necessary protection, but I have never found anything better than some dry Fern with the stalks stuck in behind the shoots of the Roses, or, if the Roses are tied to wires or trellis-work it is still easier to fix in the Fern; with this, and some Spruce branches similarly put in so as to keep the Fern from blowing about, the plants will be independent of frost. This I proved years ago when plants left unprotected were killed down to the ground. It is neither necessary nor advisable to put on such covering till there is a real appearance of a more than usually low temperature. The point is to have everything in the shape of protecting material dry and ready under cover, as a very considerable space of wall may be covered in a few hours when its application appears to be necessary. In the severe winter of 1860-61, I saw a large extent of wall covered with China Roses saved up to a height of 6 ft. by fixing straw ropes horizontally across in front of the Roses. The ropes so used were tied in at intervals to the main shoots of the Roses running about 5 in apart, with a few mats hung up in front of these. The Roses were safe up to this height, all the tops above being killed, but it was a great gain to save so much, as the portion so secured shot out vigorously, producing a fair head of bloom, and by the end of the season leaving comparatively little trace of the injury done. Where there is a greater length than can be covered to any considerable height, by the use of a number of evergreen branches of any kind, the bigger they are the better, provided they can be made to lie close to the wall and secured by any means over the collars of the plants, and as high above as can be done, so much of the plants thus protected may reasonably be expected to escape.

Dwarf Roses.—Of these, the more tender kinds in beds and borders should at once have the ground covered a few inches with old tan, litter, Furze, or Fern. Where the three latter are used, some evergreen branches laid flat on the top will prevent the material being blown about and keep the roots and collars of the plants safe, which, even should the tops be destroyed, will break out and make vigorous growth, but where in addition to this, a sufficient number of large evergreen branches can be stuck firmly in the ground, moderately close, much may be done to secure the whole of the plants. When living further north than I am now, where these more tender Roses often suffered, I had a considerable number planted on a long 6-ft.-wide bed, over which, on the approach of severe weather, I used to fix up in the form of a span roof, a lot of straw hurdles, used later on for covering Potatoes in turf pits. So sheltered, the Roses always escaped.

Standard and Half-standard Roses, of such varieties as are most susceptible of injury from cold, can often be brought safely through a severe winter by the well-known method of thrusting some Fern or Gorse in amongst the branches composing the head, tying the whole round with twine or a pliable Willow. I prefer the Gorse for this purpose to anything else, as through the changes of weather it does not lie so close and hold so much moisture as anything of a softer nature.

Protecting Roses in Pots.—Roses in pots that are intended for forcing, or bringing on into flower slowly under glass to precede the earliest in the open air, should if possible be housed, or placed in frames or cold pits; or if even loose lights can be fixed up over them, it will be better than their remaining fully exposed to rain and snow; for though such Roses may take no harm when planted out, it is a very different thing with any plant, however hardy, when its roots are confined in a pot. Under the former condition the quantity of water will in all probability do no harm, whereas those in the pots would most likely have the greater portion of their best feeding roots destroyed—a circumstance frequently not noticed at the time; yet plants so affected are certain to be a source of disappointment, as they will neither grow nor flower anything like those that are not so injured. The pots should also be plunged sufficiently deep so as to prevent the soil being frozen, as through this cause again plants in pots, especially such as have hard woody roots, are almost certain to have the bark on these damaged by the crushing effects of the soil, expanded by being frozen, acting very differently on the earth and roots so confined, from what takes place where the roots have full liberty in the open ground.

Pruning Pot Roses.—Such pot Roses as the above should at once be pruned if not already done, and if they can have the tops dipped or washed in Tobacco-water, softened with a little Gishurst, it will destroy any living aphides, or the eggs of these most likely present though not perceptible.

Roses Grown under Glass.—By these I mean those that are kept wholly, or for perhaps nine or ten months in the year under glass, as a matter of course grown in pots, and consisting almost entirely of Tea varieties. This method of Rose growing is very different from, but often confounded with Rose forcing; for which latter purpose the Hybrid Perpetuals that are found suitable with Teas and other hybrids as well, are usually put in heat, produce a crop of flowers, and after more or less preparation by a little hardening, are again plunged out-of-doors in the summer. But it is from the Roses treated after the former method that the finest blooms, and a continuous supply for the last month in the old year, and the two first in the new must be relied upon; and the size and quantity of the flowers forthcoming during this time will be the test of the Rose-grower's ability, for if the plants are well, and skillfully managed by keeping them studiously free from mildew and aphides, with a sufficient but much reduced quantity of water to the roots during the short, sunless days of winter, and very small extent of evaporation by the almost absence of any admission of external air, but all the light possible to give, and no more moisture in the atmosphere than to keep the air from being too dry, they will keep on through this time making growth from which they will form and mature flowers. The treatment as to temperature of this description of Roses and almost all Teas becomes a study in itself that few have had an opportunity of solving so well as those who at the present day grow Roses by this method for the London market; some varieties are found not only to bear, but to absolutely require considerably more warmth than others. The practice of one of the most successful growers is to keep Niphetos almost exclusively by itself, subjecting it to a night temperature of from 50° to 55°, raising the heat by fire during the day, when there is no sun, to 65°, or a few degrees higher, using less artificial heat when there is sun to bring the thermometer up to this. So treated, with the slightest amount of air given at the top, this matchless Rose keeps on through the winter, pushing growths, and producing its long, elegant flowers with the petals as free from being crumpled as they come in the most favoured localities out-of-doors in the summer, which they will not do if grown in a lower temperature. The flesh-coloured Catherine Mermet, the rose-coloured Goubault, the sulphur Isabella Sprunt, Madame Falcot (yellow), and the buff Safrano, which are amongst the other Teas most usually grown for the production of these winter flowers, succeed with 6° or 8° less warmth both day and night. The Hybrid China General Jacqueminot stands at the head of the high-coloured kinds that force well, and on this variety most of the growers depend for their earliest flowers of deep colour.—T. Baines.

Auriculas.—These are now quite at rest, and it is almost the safest plan to withhold water altogether from their roots at this season of the year. I do not approve of the plants being quite dried up, but if the soil in the pots should be very moist and severe frost sets in, the expansion of the soil would cause many of the pots to crack, which would be disastrous. If there is any trace of green fly on the plants it ought to be destroyed by means of fumigation. At frequent intervals it is desirable to quite overhaul the plants, see if there be any trace of decay on the stems, and in all cases carefully remove dead and decaying leaves. Seedling plants in pots should be kept rather moist, as they will continue to appear through the ground during the winter.

Carnations and Picotees.—These ought long before this to have been potted and placed in cold frames. It is immaterial whether they are plunged in the frames or placed on a staging. Ours, at Loxford Hall, have the pots plunged in Cocoa-nut fibre refuse, and the plants are not far removed from the glass. I do not at all approve of the plants becoming very dry at the roots, even at midwinter; it gives a certain check to their growth, which future attention will not quite overcome. A few potfuls of choice sorts have just arrived, as I write, from the north of England, and the soil in the pots is quite wet, the green conferva on its surface showing that it has also been kept wet, and I never saw a healthier lot of plants. Do not be afraid to admit air freely during favourable weather, even if it be cold.

Dahlias.—Examine the roots of these occasionally, as some may become too damp and others too dry. It is a good time too to look over stakes, as all that are decayed must be replaced by new ones. Stakes usually last about two, or at the most four years. I pulled up a Rose stake that had been in the ground just about fifteen years the other day; it is quite sound. What is the reason may well be asked? I was using a number when I first came here and thought I would try the experiment of dipping the part that had to go into the ground in boiling pitch, and this is the result. I see others are also yet sound.

Hollyhocks.—These likewise require to be looked over. As much air as possible must be given to the frames, and the plants must be kept free from any decaying material. Sticks should be prepared for these as well as for Dahlias, and the ground for both should be trenched and manured. Clayey soil should always be trenched, if possible, before winter sets in, so that frosts may pulverize it. Light soils are improved by having some heavy clayey material placed on the surface, and left until it is disintegrated by frost.

Pansies and Pinks in beds will require but little attention. There let them rest for the present, except frosts uproot them when the plants may be pressed into the ground with the fingers. Pot plants in frames will require similar attention to that recommended for Auriculas, but the plants require a little more attention as regards water. If a stray slug gain admittance cease not to hunt at night with a lamp until it is destroyed. Fumigate also in order to destroy green fly which is a great pest to the Pansy.

Phloxes and Pentstemons.—Plants of these in pots may be wintered under any kind of cover that will throw off rain. The pots should be plunged just over their rims, and they will not be much injured even if exposed to severe frost. Slugs are very fond, too, of the young shoots of the Phlox just as they appear above ground. The surface of the beds out-of-doors should be mulched with rotten manure. This acts as a stimulant to the plants, and preserves them from injury.

Pyrethrums in beds require treatment very similar to the last and plants of them in pots should also be wintered in cold frames, the soil in the pots just to be kept moist.

Aquilegias, too, must not be neglected. The plants suffer from the attacks of red spider; indeed, this pest seems to cling to the Columbines through winter's cold and summer's heat. Green fly also feeds upon the leaves, and it is well that pits and frames where all such plants are kept should be fumigated during winter.

Tulips.—If the roots be not yet planted, do not delay a day longer than is necessary. I have planted a few roots this week, but would rather have put them out a month ago.—J. Douglas.

Indoor Plant Department.

Conservatories.—When the earliest Chrysanthemums become unsightly they should be removed, and their places filled by such as have been treated with a view to their later flowering. These must be carefully managed so as to prolong their blooming period as much as possible; they should have a little heat at night, so as to allow of some air being admitted at the bottom, with top ventilation to allow the moisture to escape. Camellias are plants which may be induced to flower at any time of the year, yet they do not like too much forcing, for when hurried too much the buds are almost certain to drop off, especially if the atmosphere is too dry. The proper time to regulate their season of flowering is when they make their growth and set their buds; by inducing a portion of the plants to make early growth, and by keeping others later, a longer season of flower will be secured. Consequently if it happens that the bulk of these plants is flowering too much altogether, and not so early as may be required, the best plan is to at once remove part of the plants to where they can receive a little heat, and have a sufficiently moist atmosphere to accelerate their flowering, and also induce an earlier growth and disposition to come into flower earlier in future seasons. This separation of the stock is especially necessary where a considerable number of the plants are planted out, and consequently cannot be removed to regulate their time of flowering; where such is the case it is better to reserve those that are planted out for whatever time there is the greatest demand for the flowers, and to use the plants that are in pots for earlier work. That general favourite Daphne indica will now be opening its flowers, and tempting us to cut more of them than we should do, as there is no plant with which I am acquainted that is more injured by cutting than this. No matter how vigorous and strong the plants may be, not more than half the current season's flowers should be cut, and these with as small a bit of the wood attached to them as possible. Winter-flowering Epacrises will now be coming into bloom; most of these possess a somewhat stiff upright habit of growth; individually this may be considered a disadvantage, but in the conservatory, intermixed with numbers of other plants of bushy or pendant growth, they are of great use. Epiphyllums, now in great beauty, should be placed in prominent situations, and elevated so as to stand clear of their neighbours. Agaves, Dasylirions, Yuccas, Cordylines, and Rhopalas might with advantage be much more extensively used in conservatory decoration than they are. Most of the species of these genera harmonise well with all kinds of blooming plants, and with little change in the materials at command they can be so altered from time to time, as to avoid that objectionable monotony of each plant being always in the same position.

Chrysanthemums.—Chrysanthemums have several properties that make them more suitable for beginners than most subjects, not the least of which is their coming in at a dull time of the year when there is little else in flower; the blooms stand long in a cut state, and when the most suitable kinds are selected, and the plants not grown too large, or spoilt by over training, they are appropriate for room decoration, where they will last for several weeks, and for which purpose their bright colours make them very attractive. They are especially suited for small gardens near towns, where the atmosphere is very frequently of such a nature as to interfere with the cultivation of more delicate subjects. They are very readily struck, and are easily managed through the subsequent stages of their growth. Neither do they suffer to the same extent as most plants by an excess of water, a kind of treatment in which the inexperienced are so liable to err—not that they are by any means indifferent to careful and attentive treatment, as is evident by the exceptionally fine condition in which they are frequently seen. With some their propagation is deferred until spring, but those that are struck from cuttings put in at the present time get their wood more fully matured, and consequently are in a condition to produce better flowers than the softer-grown, late-struck examples. We have also noticed that the late-struck plants were more liable to the attacks of mildew, owing to the softer state of the leaves. Select for cuttings the sucker-shoots that spring from the base of the old plants in preference to side-shoots from the hard wood which never grow so freely or make such good plants; they should be taken off when about 3 in. or 4 in. long, although the tops of the longer ones will answer the purpose, but are not so good. Remove two or three of the bottom leaves, cut them just below a joint, and insert them singly in 3-in. pots, with two or three pieces of crock in the bottom of each. Ordinary loam, with one-fourth sand and a sixth of sifted leaf-mould will be found to suit them admirably. As they are essentially water-loving subjects, they must never be allowed to want for it from the first day the cuttings are put in through each stage of their existence; moisten the soil as soon as the cuttings are put in; do not use bottom-heat or any heat at all, as it tends to draw them up weakly. If a few good-sized common slates be placed on the front shelf of a greenhouse or in a Vinery with 1 in. or 2 in. of sand or fine ashes on the top kept moist, and the little pots placed on this and covered with bell or hand-glasses, all they will require is the soil to be kept moist, together with a very small quantity of air for an hour or two in the daytime to dry the leaves if they show any signs of damping. Do not give any air if they do not exhibit signs of mouldiness; should this take place remove at once such as are affected. They will root in a couple of months, when the glasses can be dispensed with; in this way they will be strong and short jointed, making little top growth until they have got plenty of roots, very different from the weakly, drawn-up, newly-struck plants often seen, the bottom leaves of which are so thin and soft, as to make it impossible to preserve them through the summer, which is one of the causes to which is attributable the unsightly naked stems so often noticeable in these plants. No one needs to hesitate attempting the growth of Chrysanthemums on account of insufficient means. We have seen beautifully-managed, profusely-flowered plants struck and grown by those who had neither greenhouse nor frames, not even so much as a hand-light, by simply plunging each little pot containing a cutting into another pot 6 in. in diameter, filled with soil, and covering each with a tumbler, standing them in the window of an ordinary living room, in which they were kept until the middle of April, when they were put in larger pots and plunged under a south wall for a few weeks, after which they were placed in a more open situation. The varieties that produce the largest flowers are far from being the best adapted for amateurs, especially the kinds with incurved petals, as these largest-flowered sorts, even cultivated in the best possible manner, will not produce one-fourth the number of fully-developed blooms that the recurved kinds will. Some of the smaller incurved varieties are unsurpassed, the white Mrs. George Rundle, and Mr. George Glenny, straw coloured, a sport from the last-named variety, have all the properties to render them deserving of general cultivation. Julie Lagravère dark velvety crimson; Cardinal Antonelli, salmon-red; Annie Salter yellow, tipped with pink; and Hermine, blush, a free flowerer, may be classed as old kinds, but where only a select lot is grown they are what I should choose as the most useful medium-sized sorts for pots. The Pompone varieties are extremely free in flowering, and serviceable for cutting or general decorative purposes; the three forms of Cedo Nulli, white, yellow, and lilac, are all good; these, with Aurora Borealis, brown; Salmon, rose-crimson; and Mrs. Dix are six admirable kinds. Some of the true Anemone-flowered sorts, as also the Japanese varieties, are handsome and much admired by some people, but discarded by others for the somewhat ragged appearance of the flowers. I should not recommend any one to grow them without having first seen them.

Indoor Fruit Department.

Cherries.—Introduce these into some very light and airy structure, provided there is not a house expressly for Cherries, and keep it close at first, so as to induce a night temperature of 45° and a rise of 10° by day, but ventilate freely to maintain this stage. The plants are benefited by plunging the pots in a bed of leaves that will yield a heat of about 45°.

Figs.—This is a good time to shift any plants in pots or tubs that want that attention, using turfy loam, and if of a calcareous nature all the better. Top-dress old plants that have been grown for several years in pots, and water with manure-water. A few of the established plants may be put into a Vinery at work to force, or into a Pine-stove to produce a few dishes of early fruit. Should it be practicable to form a ridge of fermenting material on the floor of any of the fruit-houses for starting the Figs in, they would well repay the attention, in starting away more kindly and certainly than they otherwise would do. Endeavour to maintain an atmospheric temperature of 50°, and a bottom-heat of 75°, gradually raising the former as the plants advance. Syringe the Fig-trees every fine day.

Peaches.—All trees in pots wanting a shift should now receive attention. Those which were potted last year will only require a top-dressing of good turfy, loamy soil, mixed with a few crushed bones or well-rotted manure. If the loam is rather stiff, some burnt ashes, chalk, or old lime rubbish added will give it porosity and increase its fertility. When top-dressing, take as much of the old soil off the top of the pot as possible, and make the new soil as firm as the old ball. If the house is unheated, protect the roots from severe frosts by placing the pots in groups and covering them with litter or mats. An early house may now be started, giving it a very mild temperature at the beginning, so as not to have the blossoming period occurring before the sun has some influence in setting the fruit. From 40° to 50° is a safe range to commence with, and plenty of air should be given on all favourable occasions. For very early Peaches and Nectarines, a dozen or two of trees, grown in pots and forced in pits or low houses with a mild bottom-heat, will produce some nice fruit in April or May. When these are in blossom distribute with a feather in order to assist in setting the fruit. Syringe the trees twice a day with water of the same temperature as that of the atmosphere of the house until the flowers begin to open. The trees in the late succession houses will now want pruning, dressing, and tying to the trellises. A solution of Gishurst Compound, consisting of about five ounces to a gallon of boiling water will, if put on when cold, by syringing the trees, be an effectual cure for insects. Peach trees trained on walls will likewise be much benefited by the same application if put on with a powerful syringe or engine. When there is reason to fear that the borders inside or out are exhausted, some fresh turfy loam may be given to the roots, by opening a trench, carefully lifting their extremities, and planting them in the fresh soil after removing the old. Protect the outside borders with litter or dried Fern, and, if some wooden shutters or tarpauling are placed on the top, the roots will be kept quite safe from severe frosts or chilling snows.

Pines.—Fruit-swelling plants require a genial temperature of from 65° to 70°. Water must be given moderately, judiciously, and only to such plants as require it at the root, for a kindly atmospheric humidity goes far to answer their requirements during these short days, when we have not sufficient sun to evaporate it and dry the atmosphere. Such plants as have finished swelling, and are about to colour, should be lifted out from amongst the plants that are still swelling their fruit, and should be placed on a dry shelf or light end of the house, and allowed to colour in the best light at command. Water should be entirely withheld while the fruits are colouring, or they are liable to get diseased inside. Even ripe Pine-apples, placed under unfavourable circumstances, are apt to get discoloured and flavourless. Those that are coming into bloom, and such as are showing fruit, require particular attention as regards the application of water and humidity, or they may produce abortive pips or swell unevenly. Those started into fruit will require, for the next six weeks, great patience, care, and perseverance, in order to induce them to swell and perfect it for early spring use. For succession-plants in every stage, maintain a regular and kindly atmosphere, and a temperature of about 60°, but not too much humidity. Little water need be applied during the short dark days, especially where fermenting material only is employed for heating. Pot on both succession-plants and suckers as required.

Strawberries.—Long before this time, these should be snugly stored in their winter quarters, either in frames or built into the sides of ridges of coal-ashes with overlapping stone flags, broad slates, or boards to throw off the wet. The main object in taking such care of the pot plants consists in preserving their crowns from frost and cold rains, which are much more injurious to these plants than to those in the open ground, and often render them abortive or "blind." Introduce a few of the most promising of them into a Peach house just started for producing fruit in late March and April. A frame, with a good depth of leaves for bottom heat, is an excellent place for starting Strawberries in. The temperature at first should be kept moderate and somewhat low, and in the humid atmosphere which the leaves afford, the plants start away much more kindly than they do in structures heated by hot water. Keen's Seedling is still one of the best for early forcing, and President and Sir J. Paxton are good successional sorts. Eclipse is another excellent kind for forcing; its flavour is good and it carries well. For late forcing, Lucas, a first-rate Belgian sort, Rev. Mr. Radclyffe, and British Queen, are useful varieties.

Vines.—Great care should be exercised as regards the temperature of the Vineries now started, which should not range higher than from 50° to 60°. When the Vines have fairly broken their buds, the temperature may be increased from 60° at night to 70° in the daytime when there is sunshine. Vines in pots, if started in the beginning of the month in a mild bottom-heat, will furnish ripe Grapes early in May; and, as late Grapes in bottles can be kept in good condition till then, with a certain number of structures, a succession of Grapes can be had all the year round. Do not force the Vines too hurriedly, however, while the days are so short, cold, and sunless; but have all in good order to go ahead as the weather becomes brighter. Prune and dress the Vines in succession-houses as soon as the Grapes are all cut, and see that the outside borders are sufficiently protected from frost.

Cucumbers.—All overbearing should be at present discouraged, in order to allow the plants to make healthy foliage and shoots, and if some weak manure water is applied to the roots, with a top-dressing of fresh turfy soil, the growths will be induced to come stronger than they otherwise would be. Avoid hard forcing in cold, dull weather, and rather than employ too much fire-heat, cover over the sashes at night with mats or straw. Should thrips or red spider put in an appearance, syringe the foliage once or twice a week in the daytime with soot-water. This will keep these pests in check, as well as act as an excellent stimulant to the roots. In Cucumber houses or pits, in which the bottom-heat is supplied by hot-water pipes, great caution will be required to see that the soil does not get too dry for the bottom roots. Should this be the case, holes must be made in places in the bed and water poured into them to moisten the sub-soil. Always use tepid water, either for syringing or applying to the roots.

Kitchen Garden.

The season has now arrived when we may expect occasional obstructions to outdoor operations, so that there should be in store and in the mind's eye plenty of work under shelter, such as looking over old stakes, re-painting and tying them up into convenient bundles, and new ones should also be prepared by sharpening and tying them in bundles of a suitable length, for the various purposes required. Clean, point, and paint all old labels, and provide new ones of various sizes, having a well-planed face for writing on. Almost any kind of wood will do for common kitchen garden labels, but common Deal is the best of all for writing on. Prepare plenty of straw mats, thatched frames, or hurdles, and have in readiness any available kind of protecting materials, so that no risk or hindrance may be experienced when frost sets in. Prepare also pegs, crooks, sticks, and stakes, litter, dry leaves, straw, haulm, and Fern, all of which will be found useful for protecting purposes. Dry dust is a most valuable protector for the crowns of plants of any kind, or for dredging Peas and Beans and other seeds when they first make their appearance above ground at this season. Dry wood-ashes should always be kept in store in old tubs, boxes, &c., for dredging Lettuce, Cauliflower, or anything else subject to canker or mildew, which many things are, during the short dark days of winter. Nothing is so effective as dry wood-ashes for preventing such evils—but they must be dry. They answer, too, as a fertiliser for mostly every kind of plant. If there be one pursuit more than another wherein the guiding rule ought to be "Never defer until to-morrow that which can seasonably be done to-day," it is gardening; and where gardening operations are thus carried out, the fuller will be the measure of success. In the vegetable department immediate attention should be paid to the removal—if not already done—of the remains of all summer crops, such as Peas, Beans, Cauliflower, and Cabbage stumps; these latter should be placed in the bottom of any ground that is being trenched, where they will slowly rot and materially assist the roots of any vegetables afterwards grown upon the space so treated. The cropping of all vegetable ground should be so arranged that a third or a fourth of the whole space can be deep-trenched every year; and, unless the subsoil is naturally bad, 1 in. or 2 in., or even more in good land, of the bottom soil should be brought to the surface each time the ground is trenched. This is of the most service in old gardens, where shallow cultivation has been practised, and the effects of incorporating a portion of the under soil with that on the surface, which has become, by length of culture, almost effete, will be found of more service than even a heavy dressing of manure without the trenching. Where there exists a deep surface soil, or the subsoil is composed of clay, we should advise the application of a good dressing of manure at the time of trenching; but when the subsoil is of an open, gravelly, or sandy character, the manure should not be applied until the ground is about to be cropped, owing to the wasteful influence of heavy rains carrying the manurial elements away. The old system of ridging up vacant vegetable ground is right in moderately light soils, but in such as are very retentive it has this drawback, especially where it has to be cropped early, that the ridges throw off the water into the alleys, which consequently get much above their share, and when the ground is levelled for cropping, the wet hollows do not for some time get dry enough to admit of early-sown seeds progressing freely. In strong, heavy soil there is nothing equal to draining efficiently in the first instance, and then digging it up roughly in autumn.

Mushrooms.—In the absence of evaporating pans or hot-water pipes, maintain a moist atmosphere in Mushroom houses by means of syringing the walls and paths, but avoid over-watering the beds. A temperature of about 60° will be quite high enough at this season. In removing exhausted beds, any flaky pieces of spawn that show signs of vitality should be saved, in order to assist in spawning the new bed. Very many of the failures in Mushroom culture arise from using old and inferior spawn. A thin covering of hay, that has been beaten with a stick to clear it of seeds and dust, should be placed over newly-made beds, and those in bearing also, for the double purpose of checking evaporation and for maintaining a steady heat. If woodlice are troublesome, pour boiling water round the edges of the beds close to the walls, after they have retired to their hiding places.

Extracts from my Diary.

December 23.—Potting a few Vallotas. Painting Fig trees in Fig house with a mixture of soot, sulphur, lime, and Tobacco-water, and getting them tied in. Cleaning dead leaves from Violets in frames, to prevent damp. Pruning Vines in second Muscat-house. Cleaning up the pleasure-grounds and rolling down firmly all newly-laid turf; cutting evergreens for Christmas decoration.

Dec. 24.—Putting into gentle heat a few old Fuchsias, to supply cuttings. Getting a newly-made border planted with Tea Roses. Giving early Asparagus a little warm manure-water. Looking over the Grape-room, taking out bad berries, and filling up the bottles where required with water. Washing the paint and glass in second Peach-house.

Dec. 26.—Sowing Mustard and Cress. Pruning second Peach-house, and getting the shoots tied in. Cutting and tying in Chinese Arbor-vitæ hedges. Cutting down and layering some old Thorn hedges, and putting in young plants where required. Getting the Vines in second Muscat-house cleaned and painted over with composition; also forking up the border, and giving a top-dressing.

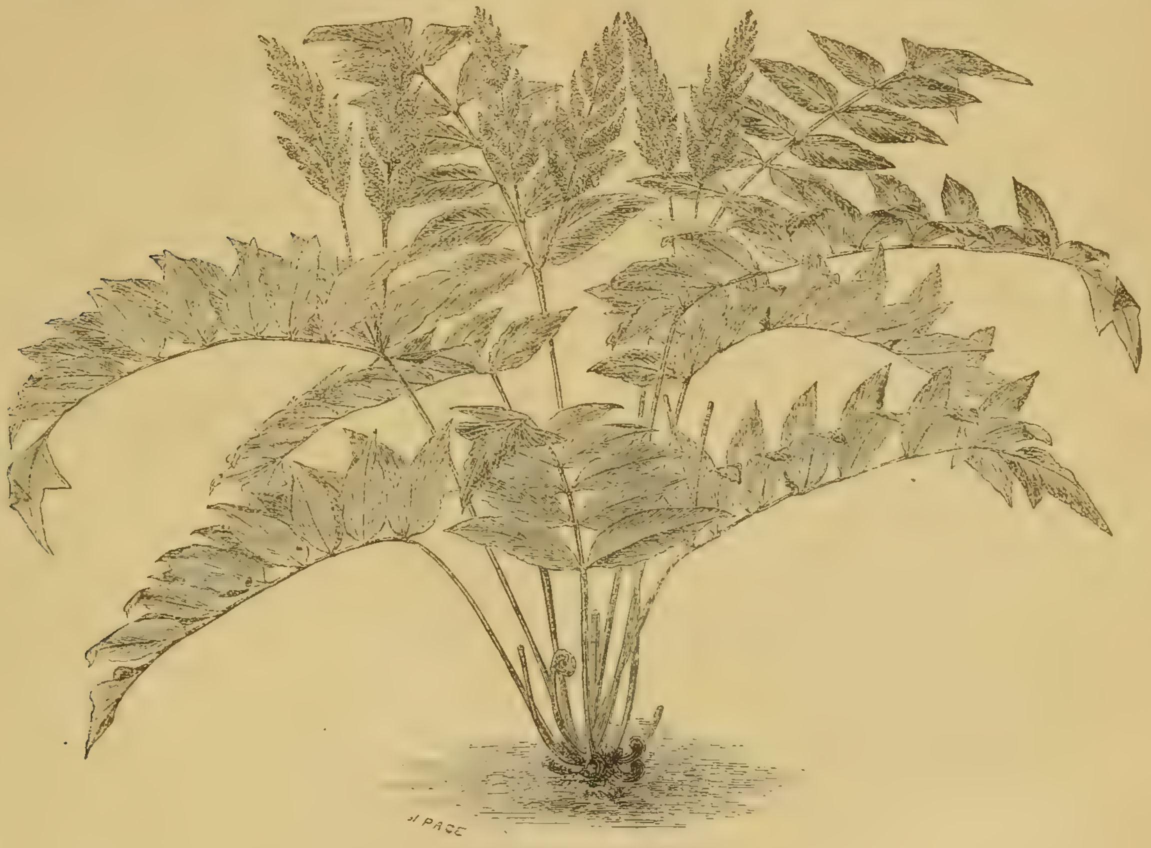
Dec. 27.—Potting 100 pots of French Beans, and earthing up a more forward lot. Getting manure on to the land whilst the weather is dry. Planting Yew hedges for protection. Getting on with the digging and trenching as fast as the weather will permit. Making another Mushroom bed, and turning over manure to sweeten.

Dec. 28.—Getting into gentle heat a few more Lily of the Valley, Deutzias, Dielytras, Hyacinths, Cinerarias, and Roses. Looking over fruit-room; also Potatoes and Onions, and removing any that are bad. Tying Mats. Making labels and cutting shreds. Fruits in use for dessert:—Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset*.

FERNS AND LYCOPODS IN THE TYROL.

Where geology is so varied as in the Tyrol we naturally look for the Ferns and Alpines to be scattered with a free hand. Indeed to study the flora of any country successfully we need in the very first instance to make ourselves acquainted with the crust of the ground which we are seeking to examine, inasmuch as the rarer and more local vegetation attaches itself to certain geological formations, and is mostly only seen to flourish on such soils and in such tracts. In the Tyrol we have the crystallised magnesian limestone known as dolomite, and this covers large tracts of country, and naturally offers us a characteristic vegetation—Phænogamous or Cryptogamous, as the case may be. Then we find also the grey granite, gneiss, porphyry, and slatey formations containing more or less of mica, and rich in plant life; even Serpontine, as we have in the Lizard in Cornwall is not wanting in the Tyrol. All these, but especially the various schists (Schieger) offer their characteristic vegetation, and it needs but a practised and experienced eye to recognise the character of the crust by the plant-life that covers it. First let us notice a few of the Cryptogams that flourish on the limestone formation (Alpenkalke). In south Tyrol we find the beautiful Nothochlœna Marantæ on warm rocks facing the south. Beyond the belt of porphyry that surrounds Botzen it is not uncommon, as Hausmann remarks, in the dolomite limestone. It shows in its fructification some affinity with our Ceterach, and, indeed, it was regarded by Decandolle as a Ceterach. Near the home of the Nothoclæna Mr. Potter, of York, a keen and accurate observer of Alpines, found another lover of the dolomite limestone, the Asplenium Seelosii, an ally of A. septentrionale, but considered by Liebhold sufficiently distinct to be regarded as a species. The Ampezzo Valley, where are the grandest dolomite peaks, abounds with two pretty little Lycopods, Selaginella serrulata and S. helvetica, fruiting as I never saw them fruit elsewhere. S. spinulosa assumes grand proportions in the *débris* of the valley, loving the shade of bushes more than S. helvetica. In deep alluvial valleys, often by the side of rivulets, rises the noble Struthiopteris, with its male and female fronds, a picture of beauty, as its name indeed implies. This Fern I first learned to know in Norway a few years ago. Cystopteris montana grows on Alpine and sub-Alpine rocks near Salzburg and Carinthia, on the Austrian borders of Tyrol, in greater perfection than on Ben Lawers, rivalling even P. Dryopteris in its noble tripinnate fronds. We next have to notice Polypodium alpestre, which, in some of its forms, resembles our L. Filix-fœmina, but may always be distinguished, as Koch observes, by "its constant orbicular sori." It grows in moist ground, often under bushes in sub-Alpine and even Alpine tracts. The last Fern to which I shall care to refer is our Jersey one, Grammitis leptophylla. I have met with it in Jersey and in Corsica abundantly, always growing in sand overshadowed by moist Grassy banks, in company with Marchantia. Hausmann records it as found in Bavaria, on the northern borders of the Tyrol. Peter Inchbald.

Hovingham Lodge, York.



Anemidityon pyhllitidis tesselata.

Anemidictyon phyllitidis tesselata.—This handsome Fern belongs to the section known as Flowering Ferns, from the peculiarity which they possess of producing their infloresence, or rather fructification, on a separate branch, which may be taken to represent a panicle of simple flowers. The sterile branch of the frond in this Anemidictyon is serrate pinnate, with rather distinct oblong-lanceolate pinnæ, which are some 3 in. or 4 in. long, broadish, and abruptly narrowed at the base, reticulately veined, the venation being marked by grayish lines, and the surface being also marked by longitudinal bands of deep green on each side the pale silvery centre. From the base of this sterile branch or frond spring up a pair of the contracted infloresence-like spore-bearing panicles, which are also divided into linear pinnæ, each clustered with little tufts of spore-cases. It was introduced from Brazil by MM. Jacob-Mackoy, of Liége, from whom Mr. Williams, of Holloway, has obtained the stock. It may be recommended as a strikingly ornamental evergreen stove Fern.

Begonia Saundersi.—This, though one of the oldest, is still one of the best winter-flowering varieties of Begonia. Amongst several others now in bloom with me, this stands out conspicuously as the brightest.—W. H.

FLOWERING PLANTS IN MARKET GARDENS.

Gardenias.—The blooms of few plants are more valued in a cut state than those of the Gardenia, and although they do not now realise such high prices as formerly, on account of the increased competition and the large numbers grown, yet good prices are often made. Mr. Ladds has a house 200 ft. long and 30 ft. wide entirely devoted to their culture. The plants are permanently planted out on mounds of earth 1 ft. or so higher than the floor of the house, with the view of preventing the roots from becoming sodden through the continual heavy syringings to which the foliage is necessarily subjected in order to keep it in a healthy growing state and free from insects. The bulk of the plants are from 6 ft. to 7 ft. in height, and as much in width; they start into growth early in the year, and, from February, all through the summer, they yield a profusion of large flowers. Previous to commencing to force, the plants receive a thorough dusting overhead with a mixture of soot and guano in order to clear them of mealy bug, a pest to which Gardenias are especially subject. In that state they are allowed to remain for a few days, when the mixture is washed off the foliage by means of a powerful syringe. This treatment eradicates all insects, and, owing to forcible and frequent syringings, they are never again able to gain a footing, until the plants come fully into bloom, and syringing is necessarily discontinued. Indeed, the blooms are generally all gathered before insects of any kind can do any very serious injury to them. The guano and soot, when washed off the foliage, serve to stimulate the roots, and induce a free and healthy growth, and, although the leaves are sometimes slightly burnt by the mixture, yet it does not apparently injure the constitution of the plants. Some growers, on the other hand, cultivate them in 10-in. and 12-in. pots. They are allowed to grow from 3 ft. to 4 ft. high, and from 2 ft. to 3 ft. through at the base, and in April large houses full of such plants, well furnished with deep green, glossy foliage and loaded with fragrant, wax-like blossoms and buds, are seen in the best market gardens. Some prefer growing Gardenias in pots on account of their being more easily cleared of insects than when permanently planted out, and, moreover, they can be moved from place to place, or disposed of whenever it becomes necessary to do so. The plants grown in 6-in. pots for market are struck from cuttings inserted thickly in pots during spring, summer, and autumn; these are plunged in bottom-heat in a warm, moist atmosphere. After the cuttings have taken root, they are potted off singly into 4-in. pots, and eventually shifted into 6-in. ones, in which size they are allowed to flower. Plants from which the blooms are gathered are cut back, placed in a moist heat, and in a few weeks they break up from the bottom, and soon afterwards furnish another crop of flowers. Gardenias grown in pots, it is said, produce better-formed blooms than those planted out, and, moreover, they can be conveniently removed from place to place as required, and a few can be got into flower at a time, as becomes necessary. Cut blooms of Gardenias fetch from 10s. to 15s. per dozen when perfect in shape and colour. Plants in 6-in. pots, bearing from eight to twelve flowers, fetch from 15s. to 30s. per dozen. The best kind grown by market gardeners is G. intermedia; and G. radicans is also cultivated to some extent.

Eucharis amazonica.—At every season of the year when they can be had the flowers of this are highly prized in the flower market. Some growers have large houses of it planted out, and others grow hundreds of it in pots. The latter method is considered to be the best, as plants can then be got into bloom a few at a time as required. When planted out in quantity, however, and properly treated, there is always abundance of bloom to be had. Plants of it are seldom seen in the market, but during every month in the year its exquisitely-scented, wax-like blossoms from the chief white flowers for bouquets. No plant is more easily forced into bloom than this Eucharis, and its culture is simple and inexpensive. All that is required is to keep the stock of plants if in pots in a moderately cool house, and rather dry at their roots, and introduce a few of them into heat as they are required to bloom. If plunged in a brisk bottom-heat and kept well watered and syringed overhead they will soon throw up flower spikes. Re-potting is seldom practised, as such an operation is detrimental to the plants flowering, and sometimes they remain in the same pots for years. Liquid manure is plentifully supplied when the plants are required to flower, which makes up for the want of root-room. There is a small-flowered kind of Eucharis named E. candida, which, when plentiful, will probably be extensively grown. Its flowers are not so sweetly scented as those of E. amazonica, but they are more useful for small bouquets.

Stephanotis floribunda.—The flowers of this are always prized in the market, and growers can seldom get enough of them. Plants of it are usually planted out at the end of Cucumber houses or similar places, and trained over the roof. Thorough ripening of the wood is the chief point aimed at, and through this alone can abundance of flowers be obtained. When allowed plenty of room and properly treated, it is astonishing what dimensions the Stephanotis will attain, and what a quantity of blossom it will yield. One of the largest plants with which I am acquainted is trained lengthwise on wires, under the roof of a lean-to house 70 ft. in length. There are about thirty-five wires about 9 in. apart, giving altogether 2450 ft. or or nearly half a mile of wires, to each of which are tied quite bundles of shoots. This plant, which yearly furnishes thousands of flowers, receives but little pruning, neither are the shoots ever disturbed in any way, excepting when they get very thick indeed. In February and March the old wood pushes out abundance of bloom from the axils of the leaves, and when this crop of flowers is gathered, some of the rougher or worthless wood is cut out; young growths are made freely, and in June the plant is again a sheet of blossom. If the plant gets attacked by insects, the garden engine and clear water are brought to bear upon it with such force that the insects are dislodged. This operation is repeated at frequent intervals during the time in which the plant is out of blossom, and it is considered a much more satisfactory method than that usually adopted, viz., that of unfastening the shoots from the wires, pruning them back, and sponging them, an operation which disturbs the buds and destroys a large quantity of blossom. Where trimness and order are required, the cutting back and thinning system is doubtless the best; but where the largest quantity of blossom that can be produced is aimed at, which is the case in all market gardens, the plant must be disturbed as little as possible. Sometimes in spring may be seen in Covent Garden small plants of the Stephanotis in 6-in. pots, bearing several clusters of blossoms, but such are never very plentiful, as the flowers almost fetch as much money as can be got for the plants. Many people have, however, often been surprised to find the Stephanotis flowered in such a small state as it is found here, and have wondered how such results could be attained. The plants are struck from cuttings of half-ripened wood (not points of shoots) in autumn, or are obtained by layering a branch of a plant along a row of pots filled with soil. Such plants, when struck, have generally one joint above the pot, two leaves and two eyes. These eyes produce shoots which are encouraged to grow as much as possible until the middle of summer, when the plants are turned out-of-doors or into a pit or frame in a sunny position, in order to thoroughly ripen the wood. In autumn these shoots are cut back to firm wood and the plants are placed indoors, when they soon put forth shoots, all of which are sure to produce several clusters of blossoms. These shoots are trained round a few small stakes, and when in bloom the plants are ready for market. Such plants as are not disposed of are served in the way described the next year, when, of course, they make finer specimens. They are not allowed much pot-room as in this case they grow too long in the season, and do not ripen their wood so well, but manure water is used as a substitute for more root-room just when the plants require it. A mixture of good turfy loam, peat, and a little decomposed manure or leaf mould, to which has been added a liberal quantity of sand, forms the best compost for the Stephanotis. Good drainage and abundance of water when the plants are in full growth are also essential to the production of fine flowers and the perfect health of the plants.

TUBEROSES.—The flowers of the Tuberose are much sought after by London bouquet makers on account of their white, waxy appearance, their durability, and powerful perfume. Thousands of bulbs are imported yearly from France; I am acquainted with one grower who imports from 25,000 to 30,000 bulbs annually. These are divided into batches in order to obtain as long a succession of bloom as possible. The beginning of November is the time when the first batch is usually started. The bulbs are potted in small pots and placed in a warm house supplied with a good bottom-heat bed. When the shoots have attained an height of 9 in. or 10 in. the plants are potted into 6-in. pots and pushed rapidly into bloom. As the spring advances less bottom-heat as well as top-heat are required to bring the plants into bloom, and after April they are grown in pits and frames fully exposed to light and sun and abundance of air is given in fine weather. Forced plants when in bloom are placed in a cool house to harden them before being cut, in order that they may stand longer when sent to market. In the best of the season, which is from May to August, good plants often bear as many as six large and fragrant blossoms, but during dull weather two or three inferior ones only are produced. Light, rich mould, to which plenty of sand has been added is the kind of soil used for Tuberoses, but they will succeed in any good garden mould. Throughout the autumn, before Gardenias, Camellias, and other white flowers become plentiful, flowers of the Tuberose fetch high prices, and constitute one of the principal white flowers in the choicest bouquets. Nearly all the year round a good supply of Tuberoses may be obtained by good management. C. W. S.

Hardy Variegated Plants.—May I inform Miss Hope that there is another variegated Umbellifer that must have been forgotten, viz., Ægopodium podagraria, decided and constant in variegation, but a sad pest, except in semi-wild places. The variegated Coltsfoot is fine, but I never could persuade it to stay at home, and, when wanted, it could scarcely be found. Scrophularia nodosa variegata is one of the most striking plants with which I am acquainted.—T. WILLIAMS.

—— Safrano is one of the very best Roses for blooming in autumn under glass; and the same remark applies to Souvenir de la Malmaison in the open air.—CAMBRIAN.

THE KITCHEN GARDEN.

ASPARAGUS ALL THE YEAR ROUND.

THE accompanying extract, taken from Phillips' "History of Cultivated Vegetables," published in 1822, may possess some interest for lovers of Asparagus, but cultivators will, I fancy, fight shy of re-introducing (supposing it could be done) all the year round forcing. "Asparagus is now obtained," says Phillips, "by the attentive gardener at all seasons of the year, and the same plants are made to give two crops in the year by the following method:—Towards the end of July, especially if it be rainy weather, cut down the stalks of the plants, fork up the beds, and rake them. If it be dry, water them with the drainings of a manure heap, or with water wherein horse or cow manure has been steeped; leave the beds rather flat, instead of the usual round shape, in order that they may retain all the moisture. In ten or fourteen days the Asparagus will begin to appear; if the weather be dry, continue to water the beds two or three times a week. By this method one may cut Asparagus till about the end of September, at which time the produce of the hot-beds will be ready, so that with five or six hot-beds during the winter, one may have a regular succession of this agreeable vegetable for every month of the year. It may be observed that by cutting the beds twice a year we exhaust them; to obviate this, succeeding beds should be prepared. We are, however, of opinion that Asparagus beds do not become worn out or unproductive so soon as is generally imagined, as some of the finest Asparagus with which we have met in this country, the author recollects to have been cut from a bed at Wistburton, in Sussex, which he was then told had abundantly supplied Mr. Upperton's family for more than seventy years." No wonder that we so frequently hear complaints of young gardeners' lack of knowledge in kitchen gardening matters, seeing that a plantation of Asparagus lasts over seventy years. If such be the fact, when are they to learn, practically at least, how to make a plantation? W. W. H.

LATE-SOWN SCARLET RUNNERS.

"J. J. C." (p. 530) seems to have quite missed the point of argument between Mr. Groom and myself, which was the fitness for table use of any kind of Runner Beans in the beginning of October. May 12 for the first sowing of Scarlet Runner Beans to me seems late, although sown at a safer time than April 23, still, a succession of crops is the great thing to be desired, nor do I consider June 12 too late to sow, provided the season permits and great care be taken as to watering judiciously. I argue that Beans sown the first or second week in May, in good ground, will continue in full bearing until the middle of September, provided all the pods be regularly picked. Of course, if seed be allowed to ripen, even partially, the Beans will cease to bloom, mulch as one may or deluge with water. "J. J. C." is right as to exhibition pods; there can be no doubt that Beans which have had no check from cold nights from being planted late furnish the best specimens for show, yet even then there is another thing to be considered, no spray of blossom should be allowed to bear more than one Bean. Again, some portion of the row, or rather rows, should never be gathered from; they should be reserved from the first for seed, for the first pods will be the best, owing to the plant never having been weakened and the seed ripened in the month of August. As to French Beans, commonly called dwarf Beans, their growth is easy close to a wall which will protect them from the north and east; the only difficulty that arises is perfect protection from slugs, &c. In the case of French Beans I only sow the Canadian Wonder, and the Champion in that of Scarlet Runners.

Litton Cheney, Dorset. EUGENE E. P. LEGGE.

—— I quite agree with the remarks of "J. J. C." and Mr. Groom with regard to the advisability of making two sowings of Scarlet Runner Beans. It was my practice for some years to make only one sowing, about the first or second week of May, but I found that there was always a deficiency of Beans fit for table after the beginning of September; consequently, for the last few years I have sown twice, the first on or about May 12, and again about June 8. The second sowing comes into bearing from the middle to the end of August, and gives us abundance of fresh young Beans until frost cuts them off. This year we had them up till the last week of October. Owing to the prevalence of late spring frosts for some years back there is considerable risk in sowing earlier than May 12, and I do not think it repays one to do so, as there is but little difference in the time of coming into use between those sown at that time and those which are put in earlier. H. HAMILL.

Hound House, Guildford.

DIGGING AND BEST SPADES FOR DOING IT.

According to my experience, a man who can dig well is generally a good workman in other respects, for, as will be freely admitted it is not every man who can dig, that is, who can handle his spade in the right fashion and do his work in a workmanlike manner. A good digger puts his spade in straight and deep, and he leaves the ground even behind him. A bad digger does quite the reverse—he pushes his spade in at an angle of 45° or thereabouts; he takes one spit thick and another thin, leaving a broken trench behind him; and he is always getting the ground either too high or too low; and it has to be put right again at a considerable loss of time. Only those who have had charge of men know how much labour is lost in this way, and yet young men not unfrequently look upon such work as beneath them, and think it of very little importance whether they have to dig or not. We hardly ever have applications from young men but they want to go into the houses at once, though in many cases they have really little or no knowledge of kitchen gardening, never having learned it properly; and they are usually behind the ordinary garden labourer as spadesmen, who are, generally, their teachers in the matter of digging. I knew of a somewhat amusing case of a young man who thought, I suppose, he was fit for anything because he had passed successfully through some examinations, both botanical and horticultural. Being afterwards employed in a large garden in Scotland, where the young men do most of the work outside as well as inside, he had among other things a good deal of digging to do, until he began to think that such work was hardly in keeping with one of his acquirements, and so one day he brought his papers and certificates over to the garden with him, and when the head gardener came round, he left his spade and presented them to him, remarking that he thought when he had examined them fully he would consider him fit for something better than such work as that in which he was then engaged. The gardener, a well-known man, looked at the papers good-naturedly, and then said, "I have no doubt that everything is true that is here stated, but you see you cannot dig—the very first work a gardener learns! Depend upon it, when you can handle your spade in a workmanlike manner, I shall not overlook you, but you surely do not expect me to put you over the heads of better workmen than yourself on the strength of these papers." The gardener, I may state, accepted no premiums, in order not to be hampered, and always put the best men first. Digging is a far more important part of a gardener's education in the north of England and in Scotland than in England generally. Of five years' apprenticeship which the writer served, three were spent in the kitchen and flower garden and two in the houses. There were about twenty young men (journeymen) in the lodge, and every one had to do his share of the spade work whatever it might be. To be able to dig deep, and straight, and even, and also to be able to reverse hands, that is, to dig right or left hand foremost in going and coming across the quarter was considered something to be proud of rather than otherwise.

Next to the man comes the tool with which he has to work. In spades after the Lyndon pattern the blade is set too much at an angle for digging, and the man in consequence has to lean himself forward in order to put it down straight into the ground. For this he is compensated a little by the extra leverage which the angle affords in turning over the spit, but he would be better off with a spade that was nearly straight, like what is called the Scotch spade, in which the shaft and blade are nearly in a line, and in digging with it the men find it is as easy to put the spade straight into the soil as not. We have tried three or four different kinds of spades, and find the men like the straight spade best. It is quite a mistake to set a spade at the same angle to the shaft as in a shovel, as the two are used for quite different purposes. And now a word as to the operation of digging itself. I speak of simple digging in contradistinction to trenching or bastard trenching, which is another thing. Most garden ground is only dug one spit deep in a season, and it becomes important that the work be done well. In the first place, a good wide opening should be taken out, that there may be plenty of room to turn over the spit and bury the manure, and in the second place the digger should not take too heavy a spit, that is, too much soil before his spade, otherwise the work will be imperfectly done; thin and deep spits turned well over and thoroughly broken up constitute good digging, and *vice versa*. Those who do digging by contract take about 6 in. or 8 in. before their spade and a proportionately shallow grip of the soil, which is simply shovelled forward anyhow, their object being to get over the ground as fast as possible, and measure so many poles or roods in a certain time. I do not agree with digging by contract, but the plan is resorted to occasionally in large gardens. Then there is "rough" or winter digging, and "fine" digging. The best plan, however, is to dig the ground roughly about this season of the year, and leave it exposed to the winter frosts, and then, when cropping time comes round, it only needs stirring with a fork and sowing or planting, as the case may be. This is the chief, if not the only, advantage of winter digging: it mellows the ground for the crops, and seeds are got in in a much shorter time when favourable weather comes than when the ground has to be dug with the spade and cropped at the same time. It is astonishing how soon the soil gets into working condition when it has been rough dug at the beginning of winter, or even later; one or two droughty days render it workable. It is not always practicable to rough dig all the ground, but an effort should be made to rough dig Onion, Potato, early Pea, Carrot, and Turnip ground, and ground for all crops that have to be got in during the most precious portion of springtime, when the days are short, and dry, favourable weather is short and uncertain. As to trenching, the gardener can never do wrong in trenching or double digging as much ground as he can find time for in summer or winter, but such work is usually done during the winter, and only rough manure is put into the ground at such times. It is a mere waste to bury short, rotten manure in a trench, as it is almost wholly lost. All such should be dug or forked in with the top spit, so that it may come within reach of the roots at once. Weeds, dry litter, old Pea haulm, and general rough garden refuse may be trenched in, but all rich and partially rotted manure should be dug in only a spit deep. J. S.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Vick's Criterion Tomato.—This is a decided acquisition to our already numerous good kinds of Tomatoes. It is a free bearer, of moderate size, a good forcer, fine in flavour, perfectly smooth, and of the brightest red colour imaginable.—W. W.

Hardiness of Veitch's New Protecting Broccoli.—Severe frost set in here on Dec. 8, and has continued up to the present date (Dec. 16), the thermometer on one occasion having been as low as 14°; notwithstanding this, however, this Broccoli is still uninjured, the flower being so effectively protected by the foliage growing so as to completely overlap the heads.—W. W., *Heckfield.*

Asparagus and Salt.—Does "T. H." (p. 530) mean that salt is not a good manure for Asparagus, or that it is better without it? If so, my experience differs from his, as I have proved it to be the very best of all manures which I have ever used for that esculent. As to distance, the plants should be 3 ft. apart from each other, which will be more profitable than 18 in.—W. W. H.

Late Peas.—I quite agree with Mr. Divers (p. 518) as to Dr. Maclean being a good Pea for late use. We gathered here this season the last dish of it on Nov. 1, which I consider wonderful, as the weather during the latter part of the season was much against the growth of Peas. Dr. Maclean is a blue wrinkled Marrow Pea, of excellent flavour, and one which grows with us to a height of 4 ft. It is vigorous in habit and extremely productive, and we intend for the future to have it both for early and late crops.—E. W. Dance, *Llangattock Manor, Monmouth.*

Prince of Wales Capsicum.—The Capsicum which "A. D." mentions (p. 530) was Prince, not Princess, of Wales. This correction is necessary, as there is a variety named Princess of Wales, but which, according to my opinion, is not so effective for decorative purposes.—W. Wildsmith.

Horticultural Absurdities.—Last year we mentioned Forest Hill Cemetery, near Boston, as affording examples of very neat bedding designs; a visit to the grounds this year shows some of quite an opposite character. The amount of bedding there is something bewildering, some of it is in excellent taste, but there are things there that should never be repeated, for they "make the judicious grieve." There is one absurdity, we do not know what it is intended to represent; it is something with a handle, it may be a basket; the handle—a hollow wire frame probably—is planted with succulents, and on each side are two short pillars, which, if not barrels or casks covered with plants, might as well be, as they look like representations of those articles. It was unpleasant to see this and some other monstrosities in a place where they know how to do things better. The so-called floral designs at exhibitions are as often something to avoid as they are things to be commended. We have very little sympathy with the fashion that works flowers into broken pillars, anchors, and the like, but as this gratifies many, and affords employment to others, we do not object, so long as it is kept within bounds. At the last exhibition of the New York Horticultural Society there were liberal and extra premiums offered for works of this kind, and it brought out some strange designs. There was a pair of shoes on a cushion; the shoes were of white flowers without, and of scarlet flowers within, which looked distressingly like a red flannel lining. But why make shoes out of flowers? Why degrade these delicate creations by working them in the semblance of something that is to be trodden under foot? There were various clocks and mantlepieces, and strange affairs, unlike anything else. There was a camp fire, with a tripod, and something hanging that might have been a teapot, or may have been a tailor's goose. A greater absurdity was a fireplace, with an attempt to represent coals and flames in scarlet flowers. It becomes a question whether a society is properly educating the public taste by exhibiting such things. Of course they attracted attention, and were admired by certain people, but the persons who are pleased by such absurdities are those who would admire the old topiary work, where bears, and boars, and other horrors were clipped out of Box trees. It was a relief to turn from the numerous horticultural absurdities to one or two simple, but exquisitely neat, bouquets, not those with a silver fringe, but sufficiently beautiful without—and to the most appropriate of all the funeral designs, a plain, heavy wreath of Ivy leaves, with a few heads of ripened grain.—"American Agriculturist."

Bamboo Mats.—It is stated (p. 549) that "these mats are 4 ft. 6 in. in width" only. We can supply them from 8 ft. to 10 ft. in width, and from 10 ft. to 12 ft. in length. The sample sent to you for more convenient handling was cut small.—Alex. Wallace, *New Plant and Bulb Company, Colchester.*

TREES, SHRUBS, & WOODLANDS.

TREES AND SHRUBS AT SOUTH KENSINGTON.

The collection of trees and shrubs exhibited on Tuesday last at South Kensington by Messrs. Lee forcibly shows what fine effects may be produced in our gardens by means of a judicious selection and tasteful arrangement of hardy green and variegated arborescent vegetation. The plants in question embraced pyramidal Hollies 10 ft. high down to Conifers of 6 in. in height, all well arranged and not too thickly. They are to remain on view, we understand, for a week or two. They consist of the following :—

- Abies aurea, gold
  - Englemanni, grey
  - Menziesi, grey
- Aucuba vera fœmina (berried), green and red
- Biota argentea, silver speckled
  - aurea, golden bronze
  - aurea variegata, gold speckled
  - elegantissima, bronzy gold
  - elegantissima picta, gold, speckled with silver
  - filiformis, bright green
  - perfecta (new), green in winter, bright sulphur in spring
  - semper aurea, golden bronze
- Berberis pygmæa, deep green
- Buxus nana variegata, silver and green
- Cedrus Deodara alba spica, silver
- Cupressus Lawsoniana alba pendula, white and grey
  - alba spica, white and grey
  - argentea, silvery grey
  - aurea variegata, large gold blotches
  - erecta viridis, bright green
  - lutea, yellow
  - nana glauca, grey
  - ochroleuca, yellowish white
- Cupressus macrocarpa Crippsi, green, speckled with white
  - sempervirens variegata, green, speckled with gold
- Elæagnus pungens variegata, golden margin
- Euonymus japonicus aureus maculatus, gold in centre of leaves
  - Duc d'Anjou, light and dark green striped
  - latifolius argenteus, gold and silver
  - latifolius argenteus elegans, bright silver
  - latifolius aureus elegantissimus, deep gold margin
  - microphyllus or pulchellus, deep green
  - radicans variegatus, bright silver margin
  - rotundifolius argenteus silver margin
- Gynerium argenteum compactum elegans, silver striped
- Hedera arborea argentea, bright silver margin
  - arborea aurea, gold blotched
  - arborea elegantissima, silver edge
- Hedera arborea Rægneriana, dark green
  - arborea yellow-berried, green leaf
- Juniperus chinensis aurea, straw colour
  - drupacea, bright green
  - japonica aurea, entirely gold
  - japonica argentea variegata, silver blotch
  - japonica aurea variegata, gold striped
  - neaboriensis, greyish green
  - virginiana argentea, conspicuous white speckles
  - virginiana columnaris, dark green
  - virginiana elegans (Lee), dark green, suffused with cream
- Ligustrum coriaceum, dark green
  - japonicum, dark green
  - lucidum aureum variegatum, bright gold margin
  - ovalifolium, brightest gold margin
  - sinense tricolor, green, silver, and rose colour
- Osmanthus ilicifolius argenteus, silver margin
  - ilicifolius aureus, dull gold margin
- Prumnopitys elegans, light green
- Retinospora cupressoides, light brown
  - ericoides, light brown
  - filifera, green
  - juniperoides, bluish purple
  - obtusa nana aurea, gold
  - pisifera lutea, yellow
  - plumosa, light greenish white
  - plumosa alba spica, tips of branches white
  - plumosa lutea, yellow
  - squarrosa, whitish grey
- Taxodium alba spica, bright silver tipped
- Taxus aurea, gold striped
  - elegantissima, silver striped
  - fastigiata aurea (Standish) gold
  - fastigiata variegata (Fisher Holmes) gold variegation
  - gracilis pendula, deep green
  - pyramidalis variegata, gold striped
  - Washingtoni, bronze
- Thuja alba spica, white tipped
  - plicata lutea, gold
  - Vervæneana, light bronze

FINE SPECIMENS OF PINUS INSIGNIS.

"S. D." (p. 484), alluding to this Conifer, mentions the fine specimen of it which is growing at Bowood, and wonders whether it is still in existence. He will be glad to be informed that it is still alive and in robust health. When I saw it, in September last year, it struck me as being by far the most beautiful tree in the Pinetum. I should guess it to be about 60 ft. high; I girthed the stem, which I found to measure 10 ft. 2 in. at 5 ft. above the ground. Its wide-spreading branches swept the turf, and well clothed, as they were, with healthy Pea-green foliage, it formed a most striking and imposing appearance. At Mells Park, Somerset, there is a fairly good specimen, 53 ft. high, and girthing 6 ft. 2 in. at 5 ft. up the trunk. At Dropmore the largest tree girths 9 ft. 5 in. at 5 ft. up the stem; it is about the same height as that of the one at Bowood, but not nearly so well furnished. The best specimen further north that I know of is at Eastnor Castle, but I do not know its measurements; there are also many younger trees there thriving remarkably well. Pinus insignis, although occupying the first rank amongst Conifers in an ornamental point of view, cannot be recommended as a tree for planting indiscriminately and in quantity with a view for use and profit, as I believe its timber will prove to be of very little value. This Pine is one of those trees that start early into growth, and it is one of the last to stop growing in autumn, invariably making a second growth late in the season. It should be planted as much as possible on dry, open, airy sites, and it will probably live longest when fully exposed; the best aspect for it being from north to south-west. In Ireland, where frosts are not usually so intense as in the north and eastern counties of England, and where the climate generally is more humid, Pinus insignis grows at an immense rate; indeed, nowhere have I seen it so well grown and beautiful as in some parts of the west of Ireland. G. Berry.

Longleat.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Beech Trees and Underwood.—With respect to this subject I fear it must be said that Mr. Knight's experience is singular. In this district Beeches grow like weeds, but in every case undergrowth (Moss excepted) is absent.—North Hants.

—— "J. S. W." is right. No practical man would ever think of planting underwood in a Beech wood. Underwood cannot be grown under the dense shade of Beech trees. Moss and Sorrel is the only vegetation that seems to thrive well under the Beech.—B.

—— I did not intend to have offered any remarks on the question at issue between Mr. Knight and "J. S. W.," but as "J. S. W." has appealed to me as to the condition of the undergrowth in the several large clumps of Beech here, I have to say that there is literally nothing growing under these clumps but a short, wiry, dark-coloured Cryptogam, the name of which I do not know; but immediately you get to the edge of the Beech clumps vegetation, consisting of long Grass, Ferns, &c., begins, and the Cryptogam ends. Have any of your readers observed how, under the Scotch Fir, the common Bracken and Athyriums, &c., thrive and grow close up to the boles of the trees?—D. Thomson, *Drumlanrig.*

—— Mr. Knight's experience of Beech trees and underwood must be different from that of the rest of his neighbours. In our avenues here, where the trees consist of Beech, Elm, and Silver Firs, it is very easy to see where the Beech trees stand, as hardly anything will thrive under them. There is a Grass verge about 5 ft. broad on each side, and, wherever a Beech overhangs, the Grass will not grow. We have a good many Beech trees here, and if Mr. Knight will favour us with a visit I am sure we will make him welcome if he can put us upon a plan to get underwood to grow beneath them. In one Beech wood in particular we have tried almost everything, but to no purpose. No vegetation of any sort seems to thrive in it, nor am I surprised, considering the dense mass of foliage and the great quantity of roots which Beech trees throw out.—A. McIntosh, *Paxton House, Berwickshire.*

—— I can point out an exception to the opinions expressed (p. 534) respecting underwood under Beeches. At Alderley Park, Cheshire, there is the finest plantation of Beeches which I ever saw, and under them grow thousands of Rhododendrons, all self sown, and it is astonishing the size which they attain; and, taking into consideration the dense canopy of foliage overhead, they flower profusely. To show that they have no great aversion to the situation, I have often found vigorous plants growing from the base of the trees. Privet in this wood also does well, and the common Yew forms handsome trees. No one can expect to grow underwood of much market value where the permanent trees occupy the whole space overhead, but such situations may be made both useful and ornamental by judiciously planting suitable shrubs; and I know of no plant so suitable for this purpose as the common Rhododendron, because, if left undisturbed, the self-sown seedlings will soon occupy every spare inch of ground; and, as is well known, game rarely injures them; and what is more pleasing in early summer than masses of these plants carpeting the ground under stately Beeches! I would recommend those who may wish to try the experiment not to procure too large plants; from 1 ft. to 2 ft. high is the most suitable size, and by allowing the leaves which fall from the trees to remain, an excellent yearly addition to the requirements of the Rhododendron is the result.—A. Hossack, *Ragley, Alcester.*

Holly Berries.—These are again very scarce this season in this neighbourhood, there being no new berries, but on a few trees we have a good sprinkling of last year's fruit, which will have to do service instead of new berries. Some of the trees bloomed well, but did not set their fruit, a circumstance which I attribute to their bearing an extraordinarily heavy crop last year. This is the third time I remember having to use old berries.—W. D., *Wierton, near Maidstone.*

Cerasus Watereriana.—This being the season when alterations are usually being made in gardens, let me just say to all about to plant that they should add a plant or two of this fine Cherry, as I feel assured that, as an ornamental plant, no one will be disappointed with it.—J. C. F.

The Fever Gum Tree in Surrey.—It may be interesting to know that some seedlings of Eucalyptus globulus, which I bought some time ago from Messrs. Cheal & Sons, Lowfield, Crawley, have flourished admirably when planted in certain selected positions. Those that were placed in low ground well drained three winters ago, in situations sheltered from the north and east, have grown rapidly, being now 24 ft. high, 5 ft. through, and 1 ft. in girth. I may add that there is one in bloom; this is 12 ft. high, and has a full west aspect, and is on much higher ground than the others. Some that were exposed to the east did not stand through the second winter.—John Horniman, *Croydon.*

Stuartia pentagynia.—Your illustration of Stuartia virginica does no more than justice to a most beautiful and valuable class of shrubs. In Great Britain, unfortunately for us, as you say, it is not quite so hardy as S. pentagynia. Of the latter we have plants 8 ft. high, and your illustration represents that species exactly, except as regards the arrangement and colour of the stamens and pistils. Many years ago, when S. pentagynia was first brought into prominent notice by its introduction into the nurseries of Messrs. Parsons, of Flushing, I published a full account of it giving its history. Its flowers, which somewhat resemble those of a large single white Camellia, appear in succession about the latter part of July and first half of August. When The Garden of July 13 was received here it was in great perfection, and we cut a branch or two of the flowers to compare with those represented by your coloured plate. Plants of full size present a mass of these fine blossoms which cover the entire surface. Stuartia pentagynia, one of our handsomest native shrubs, was introduced to England nearly a century ago, and is described by Loudon under the name of Malachodendron ovatum, but now called Stuartia pentagynia. I therefore presume that it is a well-known shrub with you, though less common than S. virginica, as the latter was introduced by that enthusiastic naturalist Catesby in 1741. Loudon remarks that it was one of the plants cultivated with other American peat-earth shrubs. I have found, however, that it grows freely and vigorously in any common garden soil not too low or wet. Mr. Hemsley, in his account of S. virginica, makes a slight mistake in saying that the two species are natives of the "Eastern States" of North America. S. virginica is strictly a native of the Southern States (Florida and South Carolina), and S. pentagynia of the middle States (Virginia). The Eastern States comprise New England. This would not be of much importance, except to those who might compare the relative temperature of the native localities with their own; but very few of the trees and shrubs of Florida and South Carolina will survive the low winter temperature of the Eastern States.—C. M. Hovey, *Boston, Mass.*

Blowing up Trees.—The following particulars respecting clearing land of stumps of trees may prove useful: Cost of removing thirty-six Oak stumps on the estate of Baron de Rutzen, Kebeck Park, Haverfordwest, by means of tonite or cotton powder—

Dr.	£	s.	d.	Cr.	£	s.	d.
15 lb. tonite at 2s.	1	10	0	By 2 tons 14 cwt. firewood, say	1	0	0
44 detonators	0	1	6	Nett cost of breaking up and removing 36 stumps...	1	11	9
60 ft. fuse	0	1	6				
4 men ¾ of a day firing, &c., at 2s. 6d. per day	0	7	6				
1 man 4½ days removing the smoking wood, at 2s. 6d. p. d.	0	11	3				
	£2	11	9		£2	11	9

This was the first trial of the Baron's men after receiving instructions By a little practice there is no doubt it could be done at the average of 8d. or 9d. per stump, which by the old method would have cost from 3s. to 4s. each.—"English Mechanic."

Cyptomeria elegans.—Beautiful as this Conifer is at all seasons, it is most conspicuous now owing to the deep dark colour which it assumes in winter. We have a fine pyramidal plant of it close to the beautiful Pea-green Pinus insignis, and the difference between the two in point of colour is remarkable.—G.

NOTES FROM KEW.

Greenhouse Plants.—A very curious and interesting plant, and one, moreover, likely to attract attention during the festive season which approaches, is Rhipsalis Cassytha, a West Indian Cactaceous plant, covered at present with pearly-white, Mistletoe-like berries; its blunt-ended, cylindrical branches are arranged in whorls, the branchlets being about 3 in. in length. In a state of nature, this is an epiphyte, growing from 1 ft. to 6 ft. long, and hanging from the branches of the trees; the flowers are white and are very freely produced. Crassula lactea, a handsome succulent introduced from the Cape of Good Hope rather more than a century ago, and not nearly so frequently seen as its merits deserve, is a most useful winter-flowering plant, of the easiest culture; it has round, fleshy leaves and large panicles of pure white blossoms, which remain a long time in perfection. This is a good habited plant, and in a well-drained loam fine examples can easily be grown, even in small-sized pots. Astelia Banksi, a peculiar plant from New Zealand, is worthy of note on account of its purplish, berry-like fruits, which are produced in panicles amongst the long, sedge-like leaves, green above, and silvery-white below. Scarcely any plant is more easily grown, as it will flourish in the same pot for an unlimited period, provided it can obtain an unlimited supply of water. Strelitzia reginæ, with its large, strangely-shaped orange and azure blossoms, is one of the most gorgeous of greenhouse flowering plants. The genus was named in honour of Charlotte of Mecklenburg-Strelitz, the Queen of George the Third. All the species, of which S. reginæ is the most handsome, are natives of the Cape of Good Hope. The fine, long-stalked, glaucous leaves of this species are, in themselves, striking. The seeds are eaten by the Kaffirs. In cultivation, recourse must be had to artificial fertilisation, and even then the seeds are by no means freely produced.

Stove Plants.—Foremost in beauty amongst the tropical plants which now enliven our stoves is Eranthemum nervosum, an East Indian Acanthad with spikes of brilliant deep blue flowers; individually these do not last long, but, as they are very numerous, and as there is a constant succession for some time, the plant is well worthy a place in the most select collections of warm house plants. Plumbago coccinea superba makes a beautiful decorative object, its fine green leaves setting off to great advantage the long spikes of deep scarlet flowers; in habit, &c., this much resembles the old Plumbago rosea, but the colour of the blossoms is much more decided, and a couple of shades deeper. One of the very best of winter-flowering stove climbers is the West African Clerodendron splendens; it is a short-jointed, half-bushy climber of neat habit, and has fine, bold, deep glossy-green foliage. Where a rafter can be spared, few plants will better repay growing, particularly if planted out, as, under such conditions, its clusters of fine crimson blossoms are produced in great profusion. Tillandsia bulbosa, from Trinidad, is a Bromeliad, uniting both peculiarity of growth and of structure with floral beauty. It is an epiphyte merely requiring to be attached to a piece of wood and hung up in the moist orchid house. The leaves are Rush-like and spirally twisted, much resembling those of the spiral variety of the common Rush, Juncus communis, which passes in some nurseries as J. spiralis; their bases form a bulb-like mass, hence the name. The spike is short-stalked, and the colour of the flowers is outvied by the bright scarlet of the upper leaves.

Orchids.—Lælia anceps is a Mexican Orchid of great beauty. In habit it is far more graceful than any of the Cattleyas, on account of the length of its slender, scaly stems, from the points of which the flowers swing. The extreme delicacy of texture of petals and sepals, and the rich glowing purple of the lip, can scarcely be surpassed. L. autumnalis somewhat resembles, at first sight, L. anceps, but a closer inspection proves the two to be quite distinct in pseudobulbs, scapes, and flowers. Masdevallia polysticta, a lovely little plant, is one of the freest-flowering of all; the cup-shaped bases of its blossoms are thickly covered with small purple dots on a white ground, the tails being yellow. About half-a-dozen flowers are borne on each of the stalks, and these overtop the leaves. Dendrochilum glumaceum, with its long drooping spikes of small, ivory-white, very fragrant flowers, is a very elegant and graceful plant and one of the most desirable of Orchids. Odontoglossum Pescatorei has fine spikes of lovely blossoms, which are of the purest white, with the exception of the bases of the small lobes of the lip, and these are purple spotted; the little ridges of the same organ are yellow. The Medusa's Head Orchis, Cirrhopetalum Medusæ, a native of Singapore, is one of the strangest of Orchids; it has short, leathery leaves, and rather shortly-stalked, dense spikes of peculiarly-formed spotted blossoms, the two lateral sepals of which are prolonged into long streamers. These give the idea of a head with long dishevelled hair, hence the name. Epidendrum paniculatum racemosum, though possessing no gaudy coloration to recommend it, is still a pretty plant; it has leafy stems, about 1 ft. or 2 ft. high, and arching spikes of flowers, the sepals of which are much reflexed and of a Pea-green colour; the two petals are reduced to whitish, thread-like processes, the lip and long column are white, the former being spotted with crimson-purple.—†

ANSWERS TO CORRESPONDENTS.

Lasting Ferns for Bouquets.—"W. A. S." (p. 526) will find that Onychium lucidum is one of the best Ferns for cutting, as it not only has very elegantly divided fronds, that render it suitable for bouquet work, but it is very lasting in water when used in a perfectly mature state. To have this and others in the latter condition, they should be grown well up to the light, where they can have plenty of air to thicken and harden them, as much of their enduring powers depend on this; thin, flimsy fronds withering almost as soon as they are removed from the plants. Davallias are mostly lasting, but the best of them all for bouquets is D. bullata, unfortunately a deciduous variety, and, therefore, only available for use during the summer.—S. D.

Field Mice in a Rockery.—If Mr. Ellacombe (p. 526) will bait his mousetraps with the kernel of the Barcelona Nut—the common Nut of the shops—I think he will quickly stop the ravages of field mice. Three years ago I had a pit full of valuable varieties of Ferns nearly ruined by them. They bit out the centres of the crowns. It is incredible what an amount of mischief a pair of them will do in a short time, on account of their propensity for nibbling often without eating. Finding none of the usual trap enticements effectual, it occurred to me that Nuts formed a large proportion of their natural food, and which they store up for winter. I tried them and speedily caught the mice. These Nuts appear to be an irresistible allurement. I have since used them for all kinds of mice with a like result.—J. M., *Charmouth, Dorset.*

Paraffin as an Insecticide.—My experience with this oil certainly does not tally with that of your correspondents (p. 526.) We have on the roof of the stove here, a large plant of Stephanotis which was infested with mealy bug, and I syringed it with a mixture of one wineglassful of paraffin to four gallons of cold water, keeping the same well mixed by driving every alternate syringeful back into the pail again. The bug was destroyed and not a leaf was injured. Large plants of Gardenias were treated in a similar manner, and with equally good results.—William Thompson, *Warrenpoint, Co. Down.*

Salt-water Resisting Plants.—"A. T." (p. 526) cannot do better than plant the Tamarisk and Sea Buckthorn largely, as they will grow where washed by salt water, and the first is a very beautiful evergreen, having branches that hang over in graceful sprays, and in colour and form quite equal in appearance to many Fern fronds, and as useful as most of them for cutting to dress with flowers during the winter. The evergreen Oak succeeds uncommonly well quite close to the sea, and appears to enjoy the saline matter in the air; but whether it would grow in soils occasionally soaked with salt water, I know not, although I think it quite likely it would, if kept from them till they got their roots well down and became thoroughly established. Could not something be done by throwing up an embankment, or raising the ground into large mounds before planting, so as to get it above the general level? as then Pinus Laricio and P. austriaca, with other hardy Coniferæ and other trees might be made to succeed, and form quite a feature in the landscape.—S. D.

Fruit Trees Losing their Blossom Buds (pp. 526, 550).—The plan recommended by "J. D." will not, I think, prove effective in preventing all birds from picking off the buds of fruit bushes, Pear and Cherry trees, &c. In this part there are some kinds of these depredators that appear to hold in contempt all such devices. Nor will soot and lime mixed with water alone, as recommended by another correspondent, meet the evil complained of by "F. W. H.," for should it happen to have been applied just before a heavy shower of rain, most of it will have been washed off the trees in a few hours. There is one remedy, however, which I have never once known to fail, viz., the ordinary Vine-stem wash, either used as it is with a brush, or diluted and then applied with a syringe. If this cannot be had, I find the following mixture to act as well, and I have never lost a crop when it has been used twice or three times, say from December to the period when the buds have expanded. To a good-sized pail of soft water add about a quart of soot, ½ lb. of soft soap, one quart of lime, a little sulphur and Tobacco water, and a handful of clay well dissolved. Strain all through a piece of coarse muslin or a fine sieve. Should the mixture not pass freely through the syringe, add a little more water, but the thicker it can be used the better.—C. F., *Merlwood.*

Currants Losing their Bloom Buds.—As "F. W. H." (p. 526) lives, as he says, quite in the heart of a town, I have no doubt that sparrows are the depredators which have taken the buds out of his Currants, as they are quite as clever at that work as bullfinches, although by many they have the credit of being harmless. Where their numbers are few, and they can get vegetable food, besides a full supply of Corn, they may be so, but near towns they are an intolerable nuisance, making, as they do, as soon as Peas are through the ground, a regular onslaught on their tender tops, and dividing attention afterwards between these and Gooseberry and Currant buds, bushes of which, if left to themselves, they entirely strip in a very short time. Till I adopted the plan of syringing hot lime on them I seldom had a crop, as shooting, where there are large numbers of them, is of little avail. Bullfinches may, however, soon be settled by the use of powder and shot, as, except in rural districts, where there are plenty of woods, it is seldom that more than a pair or two are seen together, but even these do a great deal of mischief in a very quiet manner. Reverting to the protection of the bushes by means of limewash, the best way I have ever found for preparing and using it is to get some large fresh lumps, say a bushel or so if there are many trees to go over, and put them in a large tub of warm water, where they will slake in a very short time, when, after the wash so obtained is strained through a fine sieve to take out the lumps, it is ready for use, and may be quickly syringed on by a Read's or other syringe, having a jet instead of a rose, as any one skilled in the use of that implement can easily guide and disperse the stream and distribute it regularly over the plants intended to be covered. By applying the lime quite fresh it adheres the better, and, if put on when it can dry and set quickly it will remain till the buds, in their rapid swelling during the spring, cause it to crack and gradually fall off. Not only is a dressing of this kind of great value to keep off birds, but it entirely destroys all Moss, Lichen, or insects with which the bark may be infested, and soon restores it to a clean and healthy condition. It is therefore worth doing for this alone, and when the ground is fresh pointed over after to get rid of that scattered about, its appearance on the bushes is not at all objectionable.—S. D.

Stocks for Vines.—Will Lady Downs make a good stock on which to work the Alicante?—M. I. B. [We should not choose such a stock for the variety in question, but if you have no other it would answer fairly well.—S.

American Blight.—What should I do to destroy or prevent what is known as American blight, which has attacked my Apple trees very badly this season?—S. W. [Scrub the affected parts with paraffin mixed with water at the rate of a wineglassful to the gallon; afterwards put a composition of clay and cow manure over the cankered parts.—S.]

Names of Plants.—*C. E. O.*—Cymbidium giganteum.

Names of Fruits.—*H. G. E., Macartney.*—61, Marie Louise; 62, Catillac; 63, unknown. *W. M.*—Apparently mostly French varieties not in general cultivation in this country; 32 is Blenheim Orange; others unknown. *S., Frimley.*—120 is a wild, worthless variety.

Questions.

Charcoal Burning.—Will some one kindly give me a few hints in reference to burning charcoal for horticultural purposes? I have a quantity of Alder which I am anxious to convert into charcoal.—J. J.

Tea-scented Roses Out of doors.—Can any of your readers inform me whether these Roses would stand the winter planted here (Wimbledon) in a bed 4½ ft. wide from a wall 12 ft. high, which would protect them from the north and east, while the house, at a distance of 15 ft., would protect them from the north-west? The soil is a very suitable one for Rose.—F. D. L.

Pleroma macrantha grandiflora.—I had a plant of this some three or four years ago, and it flowered well with me in a young state, but I lost it in moving. I have had three plants since from different nurserymen, but cannot get them to flower, although I have kept them in an intermediate house of the same temperature as that in which I kept the first. I understand that there is a true kind and others that do not come true having been raised from seed. Where can I get the true kind? A few hints as to culture would also be acceptable. The tips of the leaves have with me a tendency to curl up and turn brown.—E. B.

Roman Hyacinths.—Are these generally later this year than usual? Mine came out soon after October 21, about the 23rd, I think; they had very little forcing, and were potted on July 29. Cyclamens, I think, are unusually forward this year. I had Camellias, too, by September 23.—M. P. S.

Winter Coverings for Ferns.—Is it a good plan to cover up Ferns (outdoor ones) with sawdust, to protect the most delicate from the cold? Would not Oak wood sawdust be the worst to put on?—A. H. M.

Begonias from Leaf Cuttings.—Would Mr. Hassock please to give a few more details of his experience in raising tuberous Begonias from leaf cuttings? He says the leaf must have the stalk attached. Are we to understand that it must have the whole stalk with the embryo bud at its base, or merely a portion to steady the cutting in the soil? If the latter and if the leaf forms a bulb, as doubtless it will if it develops into a plant, does your correspondent know from actual experience that the bulb so formed will not be blind, and refuse to vegetate the following year? I find cuttings taken from the flowering branches, if cut at a leaf which has had a flower at its base, will root and flower the first year, but the bulbs they form have no eyes, and are worthless the second year. Will the leaf cuttings not be equally unsatisfactory?—T. B.

Mr. E. Bennett, of Rabley, late gardener to the Marquis of Salisbury, at Hatfield, has, we understand, taken the large forcing establishment known as the Holly Bank Nursery, Potter's Bar, lately in the occupation of Mr. John Monro, and which he intends to work in conjunction with his home nursery.

NOTES OF THE WEEK

Snowdrops on Grass.—The best position in which to show the full beauty of these, our earliest spring flowers, to advantage is not in beds or borders, but on turf under deciduous trees, where, as a rule, the Grass is thin and mowing is reduced to a minimum. Here may be seen large beds of Snowdrops already showing the tips of their snowy petals under wide-spreading Limes and similar trees, and, as they have evidently remained unmolested for years, they promise to make an early and beautiful display. This is a good time to procure bulbs of Snowdrops, which, after being dibbled into the ground, will take care of themselves.—J. Groom, *Linton, near Maidstone.*

Carnations at Slough.—Of these, large quantities are grown in Mr. Turner's nursery for winter blooming. They are struck from cuttings in spring, and grown on in 5-in. pots in cold frames during the summer. As they show bloom in winter, they are moved to a lean-to house and placed on stair-like stages, and by this means, a good display of bloom is kept up in the house all through the winter. Several hundred plants are just opening their blossoms, which, we need scarcely say, are most valuable at this dull season of the year. Among other good kinds were A. Alegatierre, brilliant crimson, Sir Garnet Wolesley, a yellow ground kind with a scarlet edge, Souvenir de la Malmaison, pink, and La Belle, white.

Melons in Covent Garden.—There is in Covent Garden Market just now an abundance of the white and green-skinned Spanish Melons. They arrive in large boxes fitted inside with square partitions, each large enough to hold one fruit, the vacant space being filled up with sawdust. They are neither so large nor so good as those imported earlier in the year, but at this season any kind of fruit which is at all eatable is welcome.

Effective Grouping in Winter.—One of the most striking effects which we have witnessed under glass for a long time may now be seen in Mr. Turner's nursery, Slough. It consists of Calanthes, Poinsettias, and Euphorbia jacquiniæflora placed alternately on greenhouse stages with Maiden-hair Ferns, the latter interspersed so as to hide the pots. The Euphorbias are managed so that they could be used with good effect for table decoration; they are grown in the form of standards about 6 in. or 8 in. high, having heads consisting of from four to six graceful arching sprays well clothed with bright scarlet blossoms.

Browallia elata in Winter.—This is one of the most useful of old-fashioned plants for winter blooming. It is grown in quantity by Mr. Turner, of Slough, and at the present time, it is one mass of bright blue blossoms and very effective, associated as it is with well-grown Bouvardias, Gardenias, &c. Cut sprays of it are also useful in bouquets, as in a cut state they stand well for some time. The plants of it here are raised from seed sown in spring, and grown on liberally through the summer in good, sandy soil in houses or pits. Bushy plants of this Browallia are much more easily obtained than similar examples of Eranthemum pulchellum, a plant usually grown to supply blue flowers in winter, and the latter, when cut, last but a very short time in perfection.

Lachenalia pendula splendens.—Mr. Hooper has brought us a handsome flowering spike of this large and beautiful Lachenalia, grown by Mr. Barker, of Littlehampton. It is a very useful addition to this extremely interesting group of winter-flowering plants.

Botanical Society of Edinburgh.—At a meeting of this Society, held the other evening in St. Andrew's Square, a letter was read from the Rev. D. Landsborough, Kilmarnock, in which he gave an interesting account of the growth of New Zealand and Japanese plants planted by him in the open air at Corrie and Brodick, Isle of Arran. Tree Ferns were growing luxuriantly, and Dicksonia antarctica, with a girth of stem of 22 in., had fronds 5½ ft. long and 22 in. broad. The other sub-tropical Tree Ferns were D. squarrosa and Cyathea medullaris. A Desfontainea spinosa was 6 ft. in height, and flowered beautifully every summer. There were also three different varieties of Eucalyptus, from 16 ft. to 24 ft. in height, though only planted in 1872.

National Rose Society.—The annual meeting of this Society was held, as announced (by permission of the Horticultural Club, at their rooms, Arundel Street, Strand), on Thursday, the 12th inst., the Hon. and Rev. J. T. Boscawen in the chair; it was largely attended, many of our best Rosarians being present. The treasurer's account, showing a balance in hand of £25 16s. 10d., was read, passed, and ordered to be printed; the thanks of the meeting were given to Mr. W. Scott, the hon. treasurer, for the able manner in which he had fulfilled the duties of his office. The dates recommended by the General Committee for the exhibitions of 1879 were agreed to, viz., the Crystal Palace on June 28, and Manchester on July 12. Mr. McIntosh was appointed by acclamation as vice-president, and committees and officers for the ensuing year were elected. Amongst the important matters decided on were that exhibitors who are not members of the Society must pay an entrance fee of 5s., that the highest number of Roses which members would be required to exhibit for the year should be thirty-six, and (although this was done at the dinner) that a die should be made and medals offered from year to year at the various Rose shows in the kingdom as funds would permit. A subscription was entered into for this purpose, and was liberally responded to.

SOCIETIES AND EXHIBITIONS.

ROYAL HORTICULTURAL SOCIETY.

December 17.

Owing to the severity of the weather on this occasion, plants of a tender character were but sparingly represented. The chief features were the fine collection of hardy green and variegated trees and shrubs from Messrs. C. Lee & Son, Hammersmith, and brilliant stands of cut blooms of zonal Pelargoniums from Mr. Cannell, Swanley.

First-class Certificates were awarded to—

Primula Earl of Beaconsfield (Gilbert).—An attractive double rosy-flowered kind, which will be very useful for winter decorations.

Lælia anceps alba (Bull).—A striking white-flowered variety of this well-known Orchid (alluded to last week, p. 549).

Apple Dr. Hogg (Ford).—A large kitchen Apple of excellent quality, having a clear yellow skin, like that of the White Calville, and a good keeper.

Miscellaneous Plants.—Amongst Mr. Cannell's Pelargoniums the following were well represented, viz., H. Jacoby, dark crimson; Lizzie Brooks, a large scarlet kind with a white eye; Belle of Surrey, salmon and white; S. Holden, brilliant rosy-pink; Dr. Denny, bluish-purple; D. Thomson, large velvety crimson; Rienzi, orange-scarlet; Circulator, pinkish-salmon; The Shah, scarlet; Louisa, violet-pink; Titania, crimson-magenta; and Miss Gladstone, white with a salmon eye. The white, salmon, and striped kinds of Vesuvius were also shown in quantity, and attracted much attention. Mr. W. Bull, King's Road, Chelsea, sent flowering examples of Lælia anceps; and Mr. C. Green, gardener to Sir G. Macleay, Pendell Court, Bletchingly, showed Æchmea Weilbacki; also the curious Billbergia nutans and Grevillea fasciculata, to both of which latter botanical commendations were awarded. A striking group of Cyclamen, contributed by Mr. Smith, Ealing Dean, was remarkable for the dwarf compact habit of the plants, their varied marbled leaves, and their profusion of pure white or vivid purple-magenta-coloured blossoms. Mr. Hepper, The Elms, Acton, exhibited a seedling Solanum, having a pendulous habit. Mr. George, Putney Heath, showed a new rosy-pink seedling Abutilon named Rose Queen; and Mr. Thomson, Crystal Palace, Sydenham, sent cut sprays of Eucalyptus globulus, bearing numbers of fruit buds. Mr. Gilbert, Burghley, contributed various double Chinese Primulas of an attractive character. Their names were—Marchioness of Exeter, blush; Earl of Beaconsfield, rose; Mrs. A. F. Barron, white, large and fine; and White Lady.

The gold Flora medal was recommended to be given to Messrs. Lee & Son, Hammersmith, for an extensive and tastefully arranged collection of hardy shrubs for winter gardening, the names of which are given in another column. Mr. Noble, Bagshot, furnished plants of Thujopsis borealis, aureo-variegata, which were very effective, on account of their alternate yellow and green foliage. Mr. Heims, gardener to F. A. Philbrick, Esq., Regent's Park, contributed a fine plant of Sophronitis grown on a large piece of cork. It bore nearly forty expanded blossoms and many more buds were being thrown up. The same exhibitor also sent a flowering plant of Odontoglossum Warscewiczi.

Fruit.—Mr. A. Killick, Mount Pleasant, Langley, contributed a collection of kitchen and dessert Apples, all sound and finely coloured. Among the most noticeable kinds were excellent fruit of the New Hawthornden, Tibbet's Incomparable, Golden Noble, Beauty of Kent, Blenheim Orange, Hanwell Souring, Court Pendu Plat, Wellington, and Royal Russet. A remarkably fine collection of Apples was also contributed by Mr. W. Gardiner, Ellington Park, Stratford-on-Avon. It contained finely-coloured fruits of Red Rover, Blenheim Orange, Adam's Pearmain, Fearn's Pearmain, Lord Duncan, Golden Winter Pearmain, Winter Quoining, and Annie Elizabeth. Mr. L. N. Dancer, Little Luton, showed seedling Apples of excellent quality, cooked and uncooked. Mr. D. Wilson, Castle Hill, South Molton, contributed two grand smooth Cayenne Pines, weighing together nearly 16 lbs. They were well ripened and perfect in shape. Mr. Douglas, Loxford Hall, sent bunches of Royal Vineyard and Golden Queen Grapes, the berries of the latter being affected with some disease, while those of the former, grown, we believe, in the same house, were sound and good.

Mr. Gilbert, Burghley, sent a brace of Taylor's Montrose Cucumber Despatch, apparently a fine winter kind; the same exhibitor also sent examples of a new Cabbage, which looked remarkably tender and good. Mr. Iggulden, gardener to R. B. W. Baker, Esq., Orsett Hall, exhibited fine examples of Trophy Tomato.

No. 371.] SATURDAY, DECEMBER 28, 1878. [Vol. XIV.

> "This is an art
> Which does mend Nature: change it rather: but
> THE ART ITSELF IS NATURE."—*Shakespeare.*

THE INDOOR GARDEN.

PLANT ARRANGEMENT IN STOVES.

WITHIN the last quarter of a century the internal arrangements of our stoves have been much altered, but not for the better. Where we used to see abundance of well-grown flowering plants, requiring great care combined with skilful culture in their management, we now see nearly all the space filled with what are termed fine-foliaged plants, the largest portion of them consisting of Palms, interspersed with Crotons. A few Palms, and the most distinct and good species of Crotons, should find a place in our plant stoves certainly, and, in most cases, there will be room for a few other plants, but Palms and Crotons ought only to be introduced in sufficient numbers to be a relief to the flowering plants. The question may be asked at the outset, What is the best form of house in which to grow the plants and show them off to the best advantage? In order to have well-furnished specimens, and also to maintain them in the best condition, the span-roofed form of house is certainly the best, with the ends looking to the south and north. The half-span form likewise answers very well, and is also adapted for the culture of plants. In each of these forms of houses the staging may be fixed all round; the best, because the most lasting, is that formed of slate or some sort of stone slabs. In the centre there ought to be a pit to contain some fermenting material, the best being tan, used fresh from the pits. Lean-to houses may also be utilised for stove plants; in these the arrangement of the pit and stages would depend upon circumstances and the size of the house. There is so much moisture generated in plant stoves that the best arrangement for the stages is iron supports for the slabs just mentioned. If a very large house has to be kept in good condition, houses of a smaller size ought to be constructed as auxiliaries thereto, in which to grow some of the plants up to a flowering state and to place others in after they have done flowering. If the house be nearly filled with fine-foliaged plants, the labour attendant on their management is much reduced, inasmuch as long as the plants are kept in good health they may remain in the house all the year round. Owing to the desire of late years for fine-foliaged plants, and especially for those of recent introduction, many of our fine old flowering stove plants have fallen into the background. It is very undesirable, however, that this should be continued; on the contrary, some of the weediest of the fine-foliaged plants should be discarded, and room made for plants that can be admired for their sweetness and beauty. Amongst stove-flowering plants already introduced, there is ample material to keep up a grand display all the year round. Many fancy that Orchids cannot be grown well in a plant stove, but the reverse of this is the case. A very few species of Orchids alone will suffice to keep a good-sized plant stove gay all the year round, and it will be found that Orchids do not require so much care as Ixoras and similar plants, and that they are not so likely to get into bad condition. A few of the Orchids that may generally be obtained at a cheap rate, and which are best adapted for culture in a miscellaneous collection of plants, are the following, viz.:—Dendrobium nobile, an ornamental plant which holds a very high position, and one the flowers of which are well adapted for bouquets or vase decoration; its culture is by no means difficult, and a succession of flowers may be had from it from November until the end of June. D. Wardianum, a species adapted for hanging-baskets, should also find a place in mixed collections. These two are the best for our purpose. Calanthes come next; the deciduous species for winter-flowering comprise C. Veitchi, a noble plant, the colours of which range from pale rose to rich deep rose, and almost crimson. C. vestita in variety, and C. Turneri are also good. These produce a grand display of flowers in November, December, and January. C. veratrifolia, a chastely beautiful, pure white evergreen species lasts in flower from May to the end of July. Then we must have a few of the best of the Cattleyas. C. Mossiæ, in rich variety, is the best for our purpose, and the allied Lælia purpurata will give the greatest satisfaction. These will flower from the end of April to the end of June. Cœlogyne cristata is a charming plant, easily grown, most useful for cutting, and, when the flowers are tastefully associated with delicate Fern fronds, they are much prized for placing in ladies' hair; they are of the purest white, with a yellow blotch at the base of the lip, and they may be had throughout the early spring months. Cypripedium barbatum is a plant that should not be omitted, its quaint flowers lasting a long time in beauty. Lælia autumnalis and L. anceps are useful for autumn and winter flowering, and if the new white form of L. anceps should become common, it will be a most welcome introduction. Lycaste Skinneri does well in an ordinary stove, but the cool Odontoglossums will not, nor can the Masdevallias be recommended for that purpose. A few of the easiest grown Oncidiums give a plentiful supply of cut flowers during the summer months. Orchids are preferred to most other flowering plants, because as they increase in size they also increase in value, and can always be disposed of with advantage.

Let us now advert to a few of the best winter-flowering stove plants, and foremost amongst these stands Eucharis amazonica, which, though it produces its handsome white flowers in winter, will do so under good management at any season; the same plant will flower two and even three times a year. In striking contrast to this we have Euphorbia jacquiniæflora, the wreaths of small bright scarlet flowers of which enliven our stoves during the three dreariest months of the year. Almost as welcome at midwinter is the old Eranthemum pulchellum, the bright blue flowers of which are abundantly produced. Pentas carnea gives us a plentiful supply of rose-coloured flowers, and is a plant that is easily grown. Plumbago rosea, an East Indian species, is a charming plant for large stoves, remaining, as it does, gay all the winter. To these must be added Epiphyllum truncatum and other fine forms of it, all of which flower in winter. Medinilla magnifica is a gorgeous plant for spring flowering, and one which grows most freely, but it requires a large house in which to develop its beauty. Poinsettias are too well known to need any comment, and Linum trigynum is a choice old plant, which is grown in some gardens by the hundred. If kept free from red spider, and well managed in summer, its bright yellow flowers will be produced in abundance during the winter.

Spring and summer-flowering plants are abundant. Who would be without the Stephanotis floribunda, the gorgeous Dipladenias, and Ixoras, with white, bright red, orange, and salmon-coloured flowers? all these should find a prominent place in stoves, both large and small. Franciseas, too, with their handsome purple blossoms, give additional charms to any group of stove plants. A few choice fine-foliaged plants are quite necessary amongst such flowering plants as these, but we want selections not collections of them. One looks forward to the flowering of choice stove plants with intense interest; and, whether they last for a longer or shorter period in beauty, their charming and varied tints are always appreciated. With a fine-foliaged plant the case is different; whatever may be their merits, their appearance alters but little from month to month or from year to year. They have a place, and that is sparingly intermixed amongst flowering plants, but on no account should they be encouraged at the expense of flowering plants, which no stove should lack in any month of the year.

Loxford, Ilford. J. DOUGLAS.

Medinilla magnifica.—This highly ornamental stove plant thrives remarkably well in the Fulham nurseries. I noticed plants of it the other day in 8 in. or 9 in. pots, which promised to flower well. They were thickly furnished with deep glossy green leaves, 2 ft. in length, and nearly 1 ft. in breadth.—S.

FRAMES AND THEIR USES.

Frames of some sort are indispensable adjuncts to a garden. However well adapted houses may be for the growth of plants in a general way, there are some families of them which, at a certain period of their existence, require a somewhat different treatment from that which can be accorded them in such structures. Seed sowing, propagating, and the culture of the so-called florists' flowers, can hardly be freely and perfectly carried on without their aid. A good, well-heated, brick pit, with light sashes, is a great boon to the plant grower. Somehow this is what one rarely sees in gardens; ranges of frames are erected, and then, for the want of a little additional outlay, which the provision of sufficient heating power would incur, their utility is greatly impaired. A small, conical boiler, with just a flow and return pipe, will suffice for all ordinary purposes. When the object is merely to exclude frost, I would prefer a conical boiler to any form of saddle, as it can be banked up, and may be relied on to burn steadily for ten or twelve hours without attention. Pits in which plants are to be wintered, should have the sides cemented and the bottom concreted, otherwise the moisture, continually soaking in, keeps up a state of atmospheric humidity around the plants which is often fatal to their well being. If a depth of 3 ft. can be secured, it will be all the better, as this will allow room for tall-growing plants, such as Azaleas, Camellias, Acacias, &c. The smaller plants can, of course, be accommodated by bringing them up near the glass upon shelves. For frames of this description, lights 6 ft. by 4 ft. are necessary, but they should not much exceed these dimensions or they cannot well be pulled off. Although it is far preferable that pits should be heated, yet it does not necessarily follow that plants cannot be preserved in health therein through the winter without this convenience. With care, and by giving some attention to the nature and peculiarities of each plant, or family of plants, really satisfactory results may be achieved. Some of the best Cinerarias, Calceolarias, and Primulas I ever saw, were grown in cold frames the whole winter through. The winter, even for Germany, was very severe, but by the plan adopted not a leaf was injured. There were four rows of frames, covered with 5 ft. by 4 ft. lights. The space between each row of frames was but 3 ft., and this was filled up with leaves trodden down firmly. The lights were covered with straw mats, on which wooden shutters were laid, each one overlapping the other, so that no wet could penetrate. When the thermometer registered 10° of frost, some litter was laid upon the boards, and on wet mornings, the mats were carried into an open shed close by, so that they could always be put on dry. The sashes could not, of course, be pulled off, they were provided with a handle at each end by which they were lifted off one on to the other for watering and other purposes. The great merit of this arrangement was, that it secured perfect immunity from frost; a certain amount of warmth was stored up in them, so that there were few days when they could not be uncovered.

When frames are insufficiently protected, frost gets into them, and they must then remain sealed up for days together. There is no way of examining them, and damp and decaying leaves work sad havoc. If, on the contrary, sufficient covering is afforded to preserve the temperature some degrees above freezing, it will allow of light being admitted at a much earlier period of the day. Cleanliness with respect to plants thus preserved is of the first importance; many fail through not attaching sufficient weight to this point. In damp or rainy weather they should be looked through every two or three days, picking off and clearing away the smallest portion of decaying matter. Pelargoniums, particularly the bicolor, tricolor, and variegated sections, especially require regular supervision in this matter. Their wood is of a more tender, juicy nature than that of the Zonals, and one or two rotten leaves will suffice, if allowed to remain, to completely ruin a good plant. Now and then, the whole contents of the frames should be rearranged, turning each plant round, thus equalising the light, clearing the surface of each pot, and clearing out all decayed matter from the pit. Plants stored in pits require much less water than those which stand in houses, as they rest upon a cool, moist bottom and do not get any great circulation of air around them. There is, therefore, not that necessity for immediate watering, as when the pot is placed on a dry stage near hot pipes. It should be a rule to water as little as possible in damp, rainy weather. The soil may then remain dry for a week without injury resulting therefrom; in fact, Pelargoniums should always be on the point of flagging before being watered. Do not aim at preserving their foliage in a growing condition, as this will keep them in such a succulent state that they will be extremely susceptible to rot. In watering, too, it must be remembered that half the quantity of water required in summer will suffice to moisten the soil through when everything is cold and evaporation is extremely sluggish. This fact is too often lost sight of, and, as much water is given to a plant at rest, as is required when the functions are active. This treatment, especially in plants of a succulent nature, surcharges the tissues with sap, and renders them an easy prey to a period of atmospheric humidity. There is a certain class of plants, which, making growth in the winter, are not amenable to the above described treatment. Such are Cyclamens, Cinerarias, Calceolarias, which must not stand dry any time together, or they fail to grow in a satisfactory manner. They must be the honoured guests, and have assigned to them the lightest and best positions in the frame, for they have to continue their growth and perfect their flower buds when the days are at their shortest. Camellias and Azaleas having flower buds must not be kept long in a dry state, or the quality of the bloom will be much impaired.

Ventilation must be punctually attended to, by lifting up the lights on mild days; in still foggy weather, however, they are best closed. Frames for general purposes to be employed in the spring and summer months are better and handier if of smaller dimensions, 4 ft. by 3 ft. being quite large enough; they are then easily manipulated from the front of the frame. For pricking off seedlings and hardening off shedding plants, such frames are invaluable. They are well adapted for the summer growth of Primulas, Cyclamens, Bouvardias, &c., and in the autumn they may be used for storing away Strawberry plants, wintering choice Pansies, &c., there will, in fact, be found a use for them every month in the year, and they will prove of equal value to both the amateur and large grower. Those who do not deal in specialities, but desire as much variety as may be possible, should have their frames erected in compartments; the requirements of each kind of plant may then be better and more easily regulated. Pits which have been used for wintering plants in, may be turned to account in the spring, by filling them up with good soil and planting Cucumbers, Tomatoes, Chilies, &c. Indeed, with a little forethought and management, the cold frame may be found to be the source of a no small amount of profit and pleasure.

Byfleet. J. Cornhill.

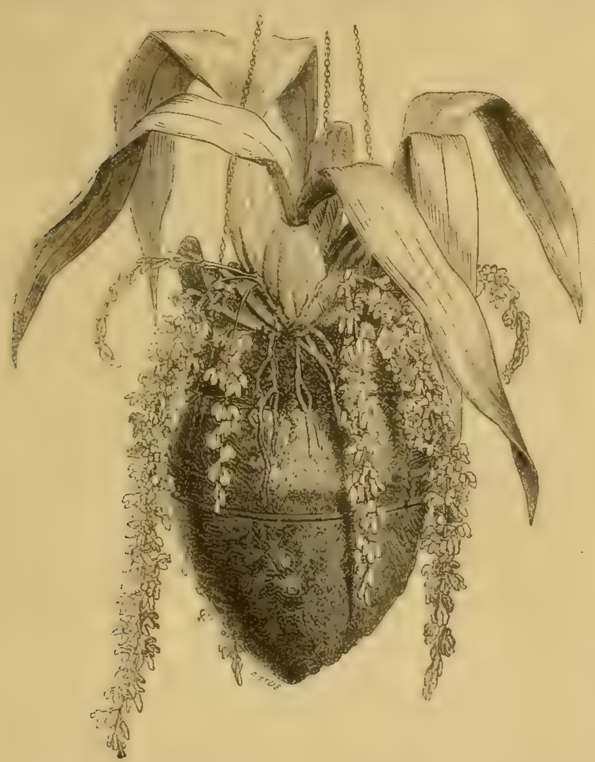
Centropogon Lucyanus.—At this season of the year this is one of the most useful and showy stove or warm-house plants which we have. It is a valuable plant for cutting from, and useful for conservatory embellishment, as it stands a long time in bloom in a heat of from 45° to 50°, and it associates well with Cyclamens, Primulas, and similar plants.—J. C. F.

New Paraffin Insecticide.—I have read with interest the various communications in The Garden on the use of paraffin oil as an insecticide, and have tried it in a small way with fair success. I found, however, a difficulty in keeping the oil and water mixed during the using, not having, as "D. I." (p. 535) has, "one man to keep on syringing into the tub while another applies the mixture;" and as I am a chemist primarily and amateur gardener secondarily, I set to work to devise a remedy, and this, I think, I have done in the production of a cream containing 50 % of paraffin oil, which will mix readily with any proportion of water, and will keep mixed during the using. It may be applied either with a brush or syringe, or preferably with a "spray apparatus." The mixture contains neither soap nor alkali, nor anything that can possibly injure the most delicate plant, excepting what the paraffin oil may do; it is purely vegetable.—Robt. Parkinson, *Aldermanbury, Bradford.*

Paraffin Oil as an Insecticide.—Having frequently of late seen paraffin oil recommended as an insecticide, and having also seen a caution or two administered against its excessive use, I may just state that I have dressed Ixoras, Gardenias, Crotons, and Stephanotis with pure paraffin oil, not adulterated with water at all, without any evil results. The plants in question are healthy and vigorous, and have not lost a leaf, although the operation was performed three months ago.—J. Perks, *St. John's, Worcester.*

RODRIGUEZIA (GOMEZA) RECURVA.

This graceful Brazilian Orchid, of which the accompanying is an illustration, appears to best advantage when grown as at the Pine-apple Nursery. The plant from which our sketch was taken was planted nearly two years ago in the outer shell of the Para or Brazil Nut (Bertholletia excelsa), and by the manner in which its roots have penetrated the porous shell, and its unusual vigour, it seems to enjoy its position. Each shell (which contains from twenty to twenty-four Nuts) is about the size of that of a Cocoa-nut, but much thicker, cup-shaped, and as neatly finished as if it were turned on a lathe. In shells of this kind numbers of Orchids are grown in the nursery in question, and very handsome they look, so much so, indeed, that it is evident that a greater variety, both as regards material and shape of baskets and blocks, might be introduced into Orchid houses with advantage. Rodriguezia recurva, like most other Orchids from Brazil, thrives well in a rather dry temperature of 60° in winter, water being given sparingly after growth has been completed and while flowering, and very liberally when the plant is making its growth.



Rodriguezia growing in a Brazil Nut-shell.

WINTERING PELARGONIUMS.

Some of your correspondents who have written upon this subject, appear to entertain widely different views with respect to the treatment which Pelargoniums, taken up in autumn from the open ground and potted, should receive. The Pelargonium family is a large one, and embraces various distinct types of growth. One has only to remark the difference in the growth and foliage of a nosegay and that of a tricolor, to become thoroughly alive to this fact. It will therefore follow that the treatment which perfectly agrees with one kind may not be the best that can be adopted for another. As far as my experience goes, I have found that strong-growing kinds of the Stella and Tom Thumb types may be relied upon to succeed under a somewhat rough and ready treatment. If simply cut back, crammed into pots and pans, and carefully and rather sparingly watered, they will make root, break again, and in all respects thrive satisfactorily when placed in a cold, light, well-ventilated house. If a little fire heat be given in damp weather, just to create a buoyancy in the air, fine, strong plants may be looked for in the spring, and these old plants are, to my mind, preferable to plants raised from cuttings, inasmuch as they come into flower, and create an effect earlier in the season. With the silver variegated varieties I have found more care needful: if cut back too far they are liable to rot. They have not the power of drawing up sap which the Zonals possess. The best plan is to pot them as they are taken up, retaining as much leaf as possible, and cut them back early in the spring. As this section is of comparatively slow growth two-year old plants are the most serviceable, and the cuttings taken off in the spring will make excellent plants for next year. In the bronze and tricolor sections we have to deal with a tribe of plants which, owing to a delicate constitution, are more difficult to preserve in vigour through the winter than the kinds just named. They make a comparatively small amount of root, are very sappy when taken up, and it therefore frequently occurs that large portions of them die off or come out in the spring in such a debilitated state that they are but of little use for flower garden decoration. This is mainly owing to the torpid state of the root, a confirmation of which may easily be obtained by comparing them with established plants. With respect to these varieties, I would always like to plunge the pots for two or three weeks in a mild bottom-heat, merely protecting them from frost and heavy rains; this would promote the formation of a quantity of fresh fibre, without in any way exerting or enfeebling the plant itself. When placed in winter quarters, they would then be found to possess sufficient vigour to carry them through that dull season. This is very different treatment from shutting them up in a warm house, which must, more or less, unfit them for a residence in a cold structure. As regards the general potting of Pelargoniums in autumn, much will depend upon the time at which it is done. A plant taken up by the beginning of October will stand a much better chance than if it remained in the ground a fortnight longer. Generally speaking, this work is put off until late in the season, merely for the sake of an extra week of battered faded blooms. The plants are kept in the beds when they should be establishing themselves in pots. The value of that fortnight is scarcely realised; there is still sufficient heat in the soil to induce root action, and the plants get established before the period of stagnation arrives. Tricolors should be taken up by October 1, and if all the variegated kinds be potted at that time they would be much the better for it. If then placed on a dry stage in a light, airy house, they will get rid of much superfluous sap, and will thus be in better condition than they otherwise would be to resist atmospheric humidity. J. Cornhill.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Roman Hyacinths.—These are the most useful flowers which any one just now could possess. Two months ago we bought a quantity of bulbs of them; all were potted in 6-in. pots in some good loam, leaf soil, and a little sand, four bulbs being put into a pot. For one month they stood in a frame under 4 in. of coal ashes, they were then removed to a glass covered pit in which there was a day temperature of 70° and a night one of 60°. Here, with plenty of water at the root, they are now in full bloom, white as snow and very fragrant. After the first spike has been cut nearly every bulb is throwing up a second one.—Cambrian.

Schizostylis coccinea Planted Out and in Pots.—The following fact with regard to the planting out of Schizostylis coccinea may possibly be found of practical use:—Early last summer (it might have been in June) a few potsful which had bloomed in a cold conservatory the previous winter, and which had been left neglected in their blooming pots, were divided and repotted in very rich soil and kept well watered. The rest of the stock, which had been planted out as usual, were taken up in autumn and also carefully potted, but the effect of this late potting was not only to retard the bloom (which may often be an advantage) but also to turn the leaves prematurely yellow, and the flowers were neither so fine nor have they lasted so long as those which were kept in their pots, than which nothing could have been more satisfactory.—K. L. D., *Ashmore.*

Frame Protectors.—I find nothing to keep frost out of cold frames so well as spreading dry hay over the lights to the depth of 3 in.—Cambrian.

Crassula lactea.—This, grown in round pans, in Messrs. Veitch's nursery, is a useful indoor plant at this time of year. The pans, though not drained, answer well, due attention being paid to watering. At the present time, large plants of this Crassula form quite attractive objects in the greenhouses at Chelsea, laden, as they are, with abundance of spikes of white sweet-scented blossoms.—S.

TREES, SHRUBS, & WOODLANDS.

FINE SPECIMENS OF WELLINGTONIA.

About twenty-five years ago this Conifer was introduced into England; it was, I think, in 1853 that Mr. Lobb sent or brought seeds of it home. Perhaps some of your readers can remember when the first seedlings were distributed throughout the country, and where the first and earliest Wellingtonias were planted? if so, it would be very interesting to know what progress in growth these trees have made in the quarter of a century during which they have been on trial. The tallest tree with which I am acquainted is at Orton Hall, Huntingdonshire; it now measures 50 ft. high, girths 5 ft. 10 in. at 5 ft. up the stem, and is 17 ft. in diameter of spread of branches at the base. This tree unfortunately lost its leader a few years ago, or it would probably have been 2 ft. or 3 ft. higher. There are some other specimens at the same place that measure within 1 ft. or so of the height of the one just mentioned. The next highest tree, I believe, is growing in the nursery at Longleat; this was planted, as nearly as I can ascertain, twenty-two years ago; it is now 47 ft. high, and girths 5 ft. 11 in. at 5 ft. above the ground; the average spread of its branches is 21 ft., and the butt contains 20 ft. of timber. At Strathfieldsaye there is the best grown and most perfect specimen of the Wellingtonia that I have ever seen, but it is not quite so tall as the two just mentioned. It has, however, a wider spread of branches and a thicker stem than either of them; its height is 45 ft., girth of butt at 5 ft. above the base 7 ft. 3 in., and the diameter of spread of branches is 24 ft. Another remarkably well-grown and handsome Wellingtonia is growing in the flower garden at Witley Court; it has even a thicker butt than the Strathfieldsaye tree; its height is 40 ft., its girth at 5 ft. up the stem is exactly 8 ft., and its spread of branches at the base 22 ft. The two latter are by far the handsomest Wellingtonias with which I am acquainted; neither of them presents that stiff, prim, clipped-yew-like outline that one has been often accustomed to see Wellingtonias present, but broken and irregular forms. Their branches of luxuriant foliage seem to drop, so to speak, into massive flakes, not unlike those of an aged silver Fir. I am pleased to be able to note this, to me, apparently new feature, for I was never an admirer of the stiff habit of the Wellingtonia in its comparatively young stages of growth. There are probably some few larger trees than those which I have mentioned. I know there was a particularly fine specimen at Lamorbey Park, Kent, but I have not got its present measurements. Will some of your readers kindly supply them? It is rather premature to form a decided opinion as to the quality, durability, and commercial value of the timber of this tree, but this we do know, that it is a robust, hardy tree, and as free a grower as the Larch in similar situations. I, however, may safely venture to predict that it will never be so good and useful a timber-producing tree as the Larch has proved itself to be.

Longleat. George Berry.

FALLACIES CONCERNING WOODLAND TREES.

If the reviewer of "Our Woodland Trees," by Mr. Heath, in the "Saturday Review" has quoted his author correctly, some of Mr. Heath's observations on the subject of trees are open to criticism. First we are told that the Holly is produced from an acorn, which will surprise those who are in the habit of decorating their rooms with Holly-berries at Christmas. Next it is stated that "it is well for a sylvan street or garden planter to know," that the Holly "is a difficult tree to transplant, because its roots descend deep, and are apt to be injured in removal;" and we further infer from the reviewer's comments, that Mr. Heath considers the drip of the Beech detrimental to vegetation, and that the English Elm is one of the latest trees "in succumbing to autumnal influences," a fact of which the reviewer says we have abundant evidence in the general deep green tint at the end of October. These discoveries, amongst others of a similar nature, no doubt are, according to the "Saturday Review," the result of a "careful survey of the characteristic features" of each species of tree in our woodlands. Now, it is well known that there are always people, themselves uninformed in such matters, who would rather be guided by such pleasant if not very accurate writers as Mr. Heath, than by a practical forester. The writer in the "Review" is himself one of this sort—one who likes to imbibe his knowledge as children take medicine, in something pleasant to the taste—even though he should lose by the process. "For a friend," he says, "who shall take us with him afield while we sit in our library chair, and set us a dreaming of summer and autumn rambles, and who instructs at the same time that he entertains and interests the would-be learner just entering on a *terra incognita*, commend us to an enthusiast like Mr. Heath." If, however, the above extracts from "Our Woodland Trees" be a sample of the author's careful observation in such matters, we doubt his being a safe guide, and one fails to see that the "fact" of Mr. Heath having been "professionally tied to London since manhood, enhances his claims to our attention." The very worst observers are those who only get glimpses of nature by fits and starts. They may note a few permanent features, but that is about all. I do not think a careful or habitual observer of trees would call a Holly-berry an "acorn," and I am quite sure no one possessing much acquaintance with trees or tree planting, would describe the Holly as a tree "difficult to transplant, because its roots descend deep and are apt to be injured in removal." I wonder what kind of tree can be transplanted without injury to its roots, be it young or old. But as a matter of fact the Holly is not difficult to transplant, nor does it send its roots "down deep." If it be transplanted at the proper season—that is, late in spring or early in the autumn—I do not know a tree that is more likely to stand the operation. I have moved many large Hollies up to thirty and thirty-five years of age, and I do not remember ever losing a single tree, and provided you get good balls of soil with the trees, you may transplant them any month in the year. This is not a matter of opinion but of every-day experience. As a rule the main roots of Holly spread out horizontally, and make such a mass of small fibrous roots quite close to the surface of the ground, that one could hardly put a penknife into the soil without cutting them, and when the trees are lifted such sorts come away like a mat, and this is the habit of nearly all dense and close-growing twiggy trees like the Holly—the roots correspond to the branches. In trees that have grown where they stand from seed, one may find occasionally a tap-root going down, but the lateral and fibrous roots are always sufficient to preserve the life of the tree in transplanting, and give it a good start. Out of fifty Hollies, young and old, which we moved last spring, we have not lost one. With regard to the lateness of the Elm in "succumbing to autumnal influences," which means, I suppose, that it is late in shedding its leaves, I confess to being as surprised at such a statement as I am at the assertion regarding the "deep-green tint of the leaves at the end of October." I never witnessed such a phenomenon, but, after dry summers, followed by autumn frosts, I have more than once seen the leaves in a fine old Elm avenue being swept up in September, and the trees are generally leafless early in October. The leaves of the Elm are of a rusty brown hue by August, and are brown rather than green by September; but, unless winds prevail, I admit that portions of the leaves often remain on the trees long after they have succumbed to autumn influences and are quite dead. The Oak and the Beech are the trees most remarkable for retaining their leaves till late in the year, sometimes till near the new year. As to drip from the leaves of the Beech being "detrimental to vegetation," foresters, while acknowledging that underwood does not thrive under the Beech, account for the fact by a less far-fetched reason. It is simply the dense and long-continued shade of the Beech that kills undergrowth, but that only happens when many Beech trees are planted together. Thickly-planted Beech woods contain little or no undergrowth, but almost anything will grow under the drip of the branches of Beech trees standing in the open park, where the light reaches the trunk all round. Under a thick plantation of Planes underwood thrives just about as ill as under the Beech, and, if anything, I think the Scotch Fir is about as destructive to undergrowth as either. In all woods the undergrowth is just healthy and luxuriant according to the amount of light it receives—a fact which should guide planters of cover. It is a sufficient commentary on the reviewer's knowledge of his subject that he has little else than praise to bestow upon "Our Woodland Trees," and that the erroneous statements we have pointed out are commended as particularly instructive and worth knowing by those engaged in planting.

W. S.

Quercus Daimyio.—Allow me to direct the attention of those who are interested in ornamental trees to this exceptionally fine foliaged Oak. It is the largest-leaved Oak which I have ever seen. A tree of it in my possession has borne leaves during the past season from 10 in. to 14 in. in length and about 5 in. in width at the widest part, and it seems to be a robust grower. This being comparatively a newly-introduced Oak, and probably not known to many planters I venture to strongly recommend it as an ornamental tree, far surpassing in size Q. macrophylla and Q. nobilis, although these are both remarkable for their handsome foliage; the latter particularly is a brilliant tree in autumn, its leaves when dying off assuming rich tints. While speaking of Oaks, permit me to mention two more well worth growing, viz., Q. Tauza splendens and Q. purpurascens; the former has fine foliage, and the latter bright reddish-purple young shoots.—G. B.

TREES THAT THRIVE IN INDIFFERENT SOIL.

In some alterations which I have recently had in hand in Surrey, I had an opportunity of seeing the ability of a few plants, not only to live, but to thrive well, in pure clay. I do not mean the heavy, retentive soil of a stiff, stubborn, tenacious character, that often is designated clay, but the real, genuine yellow article, devoid of stones and without a particle of sand or anything in the shape of loam near it. The position was on the side of a hill, through which a road had been cut, after which the slopes thus formed had been trenched over and at once planted with a variety of subjects such as are usually found at the present day in shrubberies. What was the intention or expectations of the planter as to the result of his work it would be difficult to guess, unless he was acting upon the idea I have before this heard expressed, that "one good killer was worth two good growers." At all events, very few of the trees and shrubs planted were able to live; common Laurels scarcely grew at all, and their leaves were almost the colour of those of the new yellow Dogwood; others consisted of Portugal Laurels, Aucubas, Bays, Berberis Aquifolium, B. Darwini, evergreen Oaks, Arbutuses, Tree Box, Hollies, Cotoneaster Simmonsi, C. microphylla, Hypericums, Spruce Firs, Cedars, Cypresses, Junipers, Yews, and Pinuses. Amongst the whole of these and others there were none that throve, except Thuja Lobbi, Cryptomeria elegans, and the double Furze (Ulex europæus fl.-pl.). The Thujas made shoots 18 in. long in a season, and evinced little dislike to the ungenial soil in which their roots were placed beyond carrying foliage of a somewhat paler tint than when grown on good ground. The Furze grew and appeared as healthy as if on a dry, loamy bank. The Cryptomerias also made very fair headway, and their foliage all the year round was of so intense a reddish-purple hue as I have never seen approached, even in the autumn or winter, in any other place. So remarkable was this, that at first sight the trees looked as if they were dead. Could this tree be induced to assume this colour in company with others possessing the usual shades of green, where these latter succeeded well, it would be still more valuable for contrast than it now is. It is scarcely necessary to say that it is by no means advisable to plant either trees or shrubs in such unkindly material as the above without its being first well aërated and some soil of a better description added to it; but it is something to know that there are a few plants that appear to thrive in defiance of the stubborn nature of the medium in which their roots are placed; I traced some of the roots of the Furze, and they had penetrated straight down into the clay to a depth of over 4 ft. T. Baines.

NOTES & QUESTIONS ON TREES, SHRUBS, & WOODLANDS.

Clothing Naked Stems of Araucaria imbricata.—Having two specimens of this, with handsome heads, but bare stems to a height of 6 ft. or 7 ft., it occurred to me that possibly variegated Ivy or Japanese honeysuckle might be induced to grow over them and to make them ornamental. The effect has been all that could be desired. The variegated Ivy has been allowed to completely cover the stem, whilst the Honeysuckle has been kept in bush form by clipping, and it forms a very desirable setting for the trees.—W. W. H.

Elongation of Tree Trunks.—The "College Quarterly" says that experiments made at the Iowa Agricultural College show that the popular notion that the trunks of trees elongate is entirely erroneous. Tacks were driven into the trunks of various trees, and the distance between them accurately measured. At the end of the season they were found to have neither increased nor decreased their distances. In the experiment tree trunks were selected of all ages, from one year up to five or six, and in no case was there any change whatever noticeable.

Hydrangeas Planted Out.—I would strongly recommend any one who has Hydrangeas too large for pot culture, to plant them out after all danger of severe frost is over in rich, deeply cultivated soil. Here the soil is generally stiff and clayey, resting on broken soft stone, and the Hydrangea with us forms a beautiful flowering shrub, which is very effective during the late summer and autumn months. I may remark that many of the plants produce blue flowers, about which much controversy has been held, but which to me appears to be entirely owing to the character of the soil in which they are planted. As the Hydrangeas submit to lifting and replanting as freely as a Dahlia root, I see no reason why any one resident, even in the coldest districts, might not have a Hydrangea bed by storing the plants in a cellar during winter, and replanting them in April. They would repay that attention equally as well as many of our ordinary bedding plants.—J. Groom, *Linton, near Maidstone.*

Beech Trees and Underwood.—I think I quoted "J. S. W." rightly, but it matters little, for he says underwood does not live under the Beech, and I say it does, and thrives just as well as under any other tree. It has, as "J. S. W." says, "the bad reputation for destroying underwood," no doubt. Ten or twelve years ago it was generally thought that nothing would grow under Beech trees here, and I was determined to try, and, I may say, that we have succeeded beyond our expectations in getting Rhododendrons chiefly, Yews, Laurels, &c., to grow in luxuriant masses under them, and I invite "J. S. W.," or any other interested in such matters, to come and see for themselves. We have acres covered with large Beech trees, under which, during the last ten years, thousands of evergreens have been planted, and are still being planted, as time permits. Last year we thinned from other places upwards of 2,000 large Rhododendrons, and planted them on bare spots under Beech trees, and I could show "J. S. W." great masses, that were planted years before in a similar manner, having growth 3 ft. long in one season from suckers from the bottom of these Rhododendrons. It is evident "J. S. W." has not been through the Floors estate for ten years, or, if he has, Beeches and underwood could not have been in his head at the time, or he would have seen for himself huge Beech trees under which the most luxuriant masses of evergreens may be found. I wish to dispel the "bad reputation" the Beech has, and for those similarly situated to plant as we have done here, and they will not be disappointed. I may say that thousands of Rhododendrons have been purchased and planted, chiefly under Beech, on these "bad reputation" spots, which are now the admiration of every one who sees them, for we are on a non-calcareous soil. Of course, in chalky districts and on calcareous soils Rhododendrons would not grow, but I have no doubt Box would thrive, and so would Yew, I believe. On any of our soils Rhododendrons will thrive, and this doubtless accounts for their luxuriant appearance. "J. S. W." corrects a phrase, "planted thickly" for "planted extensively," but planted thickly and not thriving in after years with underwood is as bad and as fatal as the trees themselves planted thickly, or like human beings huddled together in a locality they die of disease and want of nourishment eventually.—H. Knight, *Floors.*

—— If any more testimony is wanted to confirm the statements of "J. S. W." respecting this matter let me add mine. Altogether, here and elsewhere, I have seen some hundreds of acres of ground covered with Beech trees, but, as yet, I have never seen any undergrowth under them worth the name.—Cambrian.

—— It is said that "there is no rule without an exception," and Alderley Park, Cheshire (p. 571) is certainly the exception this time. Unfortunately, I am too far away from the place, or I would like to see the underwood in question. I have tried repeatedly in a soil where Rhododendrons grow freely to get them to thrive under Beeches, but every attempt has ended in failure. Hence, my astonishment at their growth at Alderley, and more particularly at flowering profusely.—North Hants.

Pinus insignis and other Conifers.—No doubt P. insignis is rather tender, but it ought to be largely planted wherever it will stand, for it is the greenest of all Pines, and also one of the most free-growing and perfect in habit. Our finest specimens of it were killed by the severe winter of 1859-60; but we planted a few more, and they have stood all the severities of the harsh winters and springs of East Anglia ever since, not, however, quite unaided. In very severe weather, a little long straw has been tied on the tips and allowed to hang loosely in long sprays till the weather moderated. This has proved sufficient to save the trees from getting even browned, which, of course, would greatly impair their beauty. Next to this the green variety of Abies Douglasi is perhaps our most verdant Conifer. I am pleased to be able to indorse all that "S. D." (p. 484) so forcibly says of the merits of this fine Spruce; also of Pinus austriaca and Picea Nordmanniana and P. cephalonica. P. Pinsapo also does remarkably well here; but these Silver Firs are somewhat singular. For instance, there seems little constitutional difference, one would suppose, between such plants as Picea Nordmanniana, P. nobilis, P. grandis, and P. Webbiana; and yet, while the first grows here like a weed, the others only consent to live, and P. Webbiana hardly that. On visiting other places one finds other varieties thriving well, and such sorts as P. Pinsapo and P. Nordmanniana stunted and unhealthy. The influences of local climate and soil on trees are among those matters that require new and fuller investigation. Planters and improvers would also do well to make careful note of the trees and shrubs that do best in any given neighbourhood before proceeding to plant extensively. Locality, after all, often proves the most powerful factor in determining ultimate results.—D. T. Fish.

Robinia pseud-acacia angustifolia elegans is a graceful narrow-leaved variety, very ornamental, and suitable for town or suburban gardens. Its small elegant leaves are almost Fern-like.—G. B.

Aralia spinosa.—This handsome-foliaged shrub or dwarf tree deserves notice on account of its late blooming, and also for retaining its large compound leaves until autumn frosts warn it that winter is approaching. I consider it far superior to its near relation Dimorphanthus mandschuricus. This latter sheds its leaves a month or six weeks earlier than the former, which is, to my thinking, a faulty property in shrubs or trees that are planted for ornament. What should be encouraged in planting is the selection of plants that bloom late and do not drop their leaves early. Spring and summer flowering shrubs are plentiful enough. Aralia spinosa bears its huge panicled inflorescence on the points of its principal shoots of the current season's growth. It is seen to the best advantage on a sloping Grassy bank.—G. B.

Eucalypti the Tallest Trees in the World.—The tallest accurately measured Sequoia (Wellingtonia) standing in the Calaveras Grove, California, measures 325 ft., and there is no positive evidence that any trees of this genus ever exceeded that height. Of late years, explorations in Gippsland, Victoria, have brought to light some marvellous specimens of Eucalyptus, and the State Surveyor of Forests measured a fallen tree on the banks of the Watts River, and found it to be 435 ft. from the roots to the top of the trunk. The crest of this tree was broken off, but the trunk at the fracture was 9 ft. in circumference, and the height of the tree when growing was estimated to have been more than 500 ft. This tree, however, was dead, though there is no doubt that it was far loftier than the tallest Sequoia. Near Fernshaw, in the Dandenong district, Victoria, there has recently been discovered a specimen of the Almond Leaf Gum (Eucalyptus amygdalina) measuring 380 ft. from the ground to the first branch, and 450 ft. to the topmost twig. This tree would overtop the tallest living Sequoia by 125 ft. Its girth is 80 ft., which is less than that of many Sequoias, but, as far as height is concerned, it must be considered the tallest living tree in the world.—"Scientific American."

Cedars at Lebanon.—Here I am at last, realising one of the dreams of my boyhood, under the trees that I have always resolved to visit whenever an opportunity should occur. I had made up my mind to be disappointed, but, on the contrary, am agreeably surprised with the Cedar grove. Certainly there is no forest, and amidst lofty mountains, rising around in a magnificent amphitheatre, the grove from a short distance appears but a small plantation, a mere patch in the valley of bare mountain sides; but on nearer approach the grove rapidly assumes larger proportions, and on actually entering the wood and passing under the huge trunks and limbs of these ancient timber trees one realises that it is the remains of a vast forest, and can quite imagine oneself in the depths of widely extended woods. Thousands of seeds from the fallen cones are germinating after the equinoctial thunderstorms, but as fast as they appear above the ground the young plants are devoured by goats and destroyed, otherwise the whole valley might speedily be covered with Cedar trees. I enclose specimen of a young Cedar. I have written an appeal for aid to enclose a space around the Cedars for the propagation of young plants.—"Gardeners' Chronicle."

The Golden Oak (Quercus concordia).—I speak of this Oak, not because there are no other golden Oaks, but because it is golden *par excellence*. Developing leaves somewhat late, and continuing green still later, mid-August arrives before the golden colour in this Oak is fully matured. It forms, consequently, a remarkably fine autumnal tree—one of the trees that brighten up a landscape when foliage generally has commenced to fade. Then, not only is this colour rich in August, but, with a persistency scarcely seen elsewhere, the same colours linger on, and even become intensified during September. Indeed, what the Purple Beech is to June, the Golden Oak is to early autumn; also, like the Purple Beech, its great charm lies in its solid colour. For this reason, as well as for the contrast of colours, certain unnamed varieties of the Purple Beech, that seem to don extra purples in autumn, group with this Oak most effectively. The colour of Quercus concordia is a clear gold, which is suffused or spread over the entire leaf, not mingled or variegated with green, like so many golden-leaved plants. In other ways the Golden Oak is quite as satisfactory. Vigorous of growth for an Oak, its leaves are large and enduring in winter as well as in summer. In fact, its reputation must always increase, if the possession of permanent variegation and solid beauty and endurance afford any title to admiration. Unfortunately for its rapid growth into popularity, it belongs to the slow-growing class of Oaks, none of which propagate with readiness and ease, except from seed. As a variegated plant, however, the Golden Oak must be grafted, if its rich colour is to be retained. It will not, therefore, soon be common or sold at the price of Silver Maples.—"Country Gentleman."

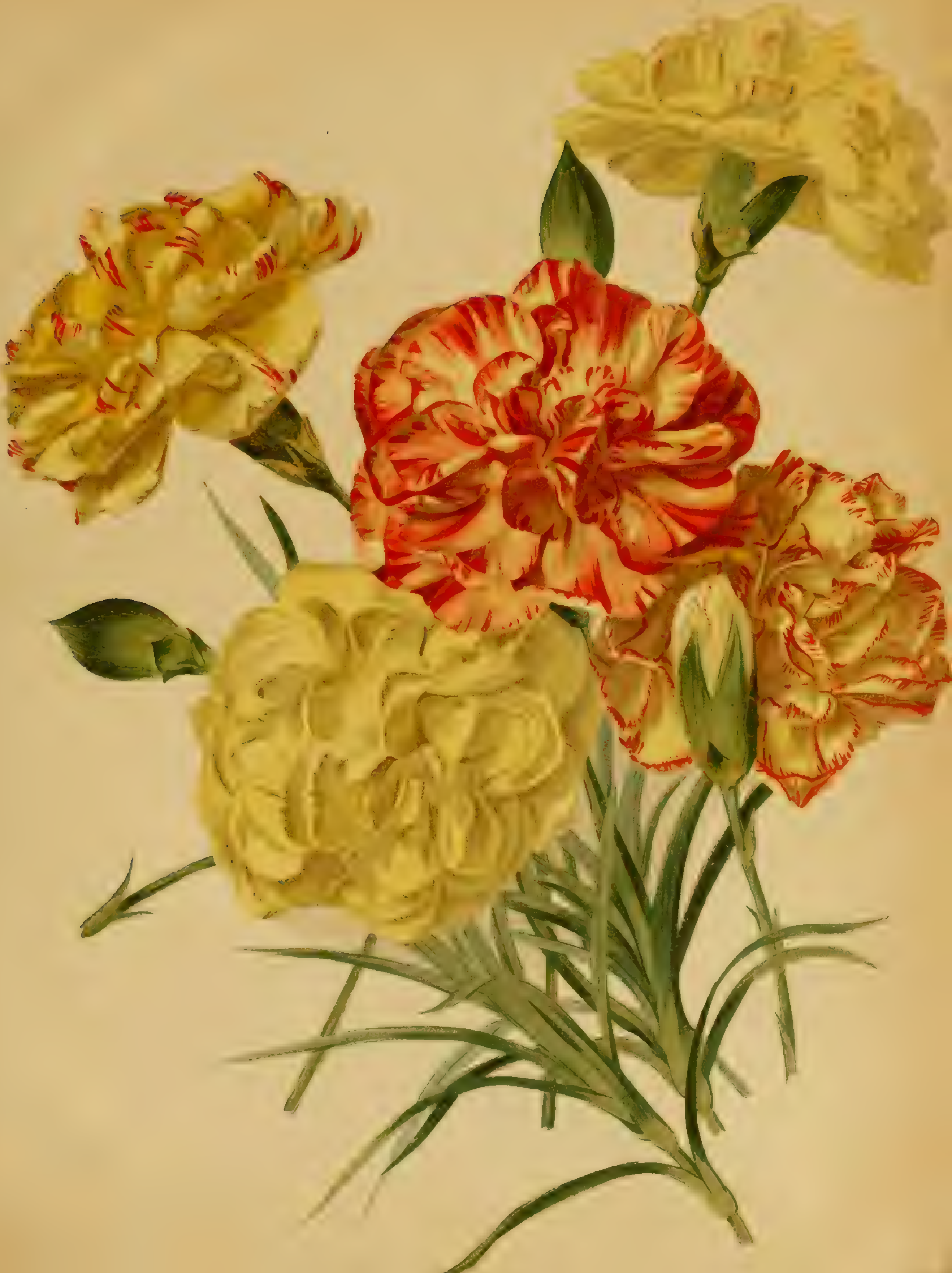
PLATE CLVII.

YELLOW CARNATIONS AND PICOTEES.

The perpetual flowering section of Carnations and Picotees rank amongst the most valuable of winter-flowering plants. Who would not be proud of a bouquet of them about Christmas? Indeed, I have proved most conclusively that from a collection of only three or four dozen plants one can have flowers all the year round. Who can name another plant, with the exception of the Rose, of such exquisite beauty and delicate perfume, that will flower so continuously as this? Until very recently we had no yellow ground Picotees worth naming amongst the perpetual flowering kinds, and, indeed, until the advent of Ascot Yellow and Prince of Orange, yellow ground Picotees were not worth growing; hence they remained in obscurity up to the year 1878. Prince of Orange is far in advance even of Ascot Yellow as regards freedom of growth, and is the only one that I have been able to retain in our collection with ordinary care. Its clear yellow, crimson-edged flowers, full and of the largest size, are singularly attractive. In the autumn of 1877, when visiting the Slough Nurseries, Mr. Turner pointed out a batch of 250 seedlings from Prince of Orange which were so promising that both of us expected some startling results, and our most sanguine hopes have been fully realised. Most of the seedlings from this source flowered in 1878, and amongst them are many distinct and handsome varieties Of these the first selection was exhibited at Regent's Park on July 10. I took the following notes of them at the time:—Ne Plus Ultra, a clear yellow flower of large size, petals broad, and edged with reddish scarlet, the ground slightly barred with the same colour. Sultana, also a very large full flower of a reddish buff colour flaked with scarlet. Lady Roseberry, clear primrose. These received first-class certificates. Others consisted of Princess Marguerite, pale yellow, edged and flaked with scarlet. Dove, a very large flower, yellow, streaked with scarlet, and Lightning, a showy and distinct flower; all good. Subsequently to this, the National Carnation and Picotee Society awarded first-class certificates to Ophir, a fine yellow self, and Lord Beaconsfield, a kind with well formed flowers of a reddish buff colour, edged with crimson. To these may be added Eleanor, primrose, edged and flaked with red. Henry Tait, also yellow, with flakes of red, and heavily edged. These, so far, are the cream of the collection, and every one of them ought to be grown.

To have blooms of the best quality in winter, it is necessary to start propagating very early; the small side growths should be slipped off in January; and this applies especially to varieties of the Prince of Orange type, which do not come so early into bloom as the others. Indeed, those raised from pipings about the end of January will not be likely to be in flower until early in the following year. The pots containing the pipings should be plunged in just a little bottom-heat in a forcing pit; they are apt to damp off if covered closely with a handlight or bell-glass, and are not likely to root freely if quite exposed. I usually place a square of glass over them, which arrests evaporation sufficiently to prevent any of them from shrivelling. Future results will depend on the care and skill devoted to their culture. They must be carefully potted off into small pots, keeping them quite close to the glass when they are in a warm house. The best time for repotting them is when the pots are fairly well filled with roots. The soil should be good, friable, turfy loam, and almost any kind of loam will answer, light, medium or heavy, all of which I have tried with success. Add to four parts of the loam one of leaf-mould and one of rotten stable manure, with a little sand. During summer I place the plants out-of-doors in a sunny position, taking care to fasten the main stems, as the plants advance in growth, to suitable supports. About the end of September the pots should be moved into a greenhouse for the winter. It is not unlikely that the leaves may have become affected with green fly, and if so, the plants will not succeed until it is destroyed by fumigating with Tobacco smoke.

The old yellow Picotees are not adapted for borders; rough, wet, and changeable weather in winter would kill most of them. King of the Yellows is one of the best for borders; it is Clove-scented, and is the only pure yellow that has been proved

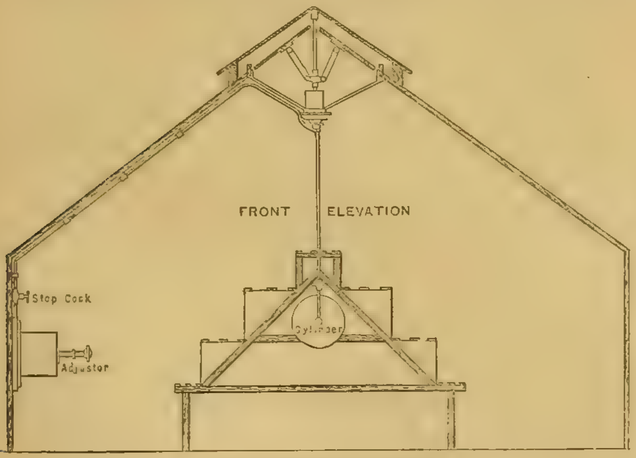


to succeed out-of-doors under ordinary border treatment. Of other colours we have Bride, white; Mrs. Matthews, white, very sweet; Elysian Beauty, rose; Princess Alice, white; Hindoo, crimson; Cremorne, purple; Sentinel, scarlet; Prince Arthur, rich dark purple; Elegant, Coroner, and Fire-eater; all of which are hardy and do not require much care.

J. Douglas.

HUNT'S PATENT AUTOMATIC VENTILATOR.

The importance of a good and economical self-acting ventilator, adapted to horticultural structures, has long been recognised; hence the many attempts which have been made from time to time to construct one, all of which, however, have proved to be practically useless, either because too delicate or too complicated machinery has been employed, or else because the cost of erection has been too great to be consistent with the purpose for which they were intended. I am well aware that self-acting ventilators are generally looked upon with indifference, and are thought to belong rather to fancy than to practical gardening; and after an inspection of the imperfect methods which have hitherto been in use, this is not surprising; but the simplicity and completeness of Mr. Hunt's system will, I venture to think, secure for it a more favourable and lasting impression. This apparatus is no toy; on the contrary, it is likely to prove most useful. In designing it, Mr. Hunt appears to have studied the requirements of cultivators in respect to ventilation most thoroughly, as he can insure the ventilators opening and shutting at any desired temperature, not by a sudden jerk or movement, but in the most gradual, precise, and regular manner, in proportion to the increase or decrease of temperature in the house. For instance, supposing the temperature of the house to be 40°, and he wished the ventilators to open slightly when it reaches 45°, and so to continue to open gradually with the increase of temperature till the desired maximum of, say 65°, is attained, and to close in the same regular manner with the decrease of temperature, so as to shut when the minimum of 45° is again reached, he can not only secure this result, but feel perfectly assured that the process will be repeated in the same gradual, precise, and proportionate manner, as often as any variation of the temperature of the house occurs. He can, moreover, at a moment's notice, simply re-adjust the apparatus so as to secure ventilation at a lower or higher degree, or at any reasonable range of temperature which may be required.



Patent Automatic Ventilator.

As a large portion of a gardener's time and attention is occupied, in the spring season especially, in regulating ventilators, it will, I think, be readily admitted that if this can be done so correctly (as Mr. Hunt guarantees it can) by his apparatus, it deserves to be favourably received, especially by amateurs, who are often compelled to leave their greenhouses, and Cucumber frames unattended for hours, and too often find on their return, instead of healthy specimens, scorched leaves and shrivelled fruit. To them it would be a source of pleasure and satisfaction to reflect that in their absence the requirements of their plants and fruits were being duly attended to, with the nicest regularity and precision, by a silent, inexpensive, trustworthy help. I may mention that in the accompanying sketch the apparatus is purposely drawn too large in proportion to the house, in order to make it more easily understood. The principle upon which it acts is by compressed air. It consists of four parts, viz., an air pump, a zinc or cast iron receiver, an indiarubber bellows, and connecting pipe with valve. It is so ingeniously arranged as to make every stroke of the pump, whether in forcing air into, or withdrawing it from the receiver, represent a definite number of degrees of heat, so that as expansion or contraction of the air in the receiver takes place, by the varying temperature of the house, the necessary motive power is obtained for raising the lights. It is most exact and regular, very inexpensive, and comparatively everlasting.

The question of cost will naturally arise, and this, of course, will vary according to the size of the house and other circumstances, but, judging from the simplicity and plainness of the apparatus, I should say it ought to be erected at a price which would induce every one who possesses a greenhouse to adopt it.

T. Challis.

Wilton House, Salisbury.

GARDENING FOR THE WEEK.

Indoor Plant Department.

Lachenalias.—The earliest potted bulbs of these ought now to be showing bloom, and in order to have the stems of these sufficiently firm to stand erect without support, they should be placed on shelves in cold pits or frames close up to the glass; or, better still, plunged in cinder ashes, as then their roots are kept in a more uniform state of moisture. Any attempt at forcing Lachenalias is sure to end in failure and disappointment, as the slightest artificial heat, unless attended with an abundance of fresh air, draws them up and gives them a very weedy appearance. The best way of getting them into bloom early is to start a part of the stock immediately after they have had a fair rest, and let them come slowly and naturally on in any cold frame till they begin to show flower, when they can at once be removed to the greenhouse, where they will then last a long time in perfection. Lachenalias seldom get anything like a sufficient supply of water, and, like most other bulbous-rooted plants, get ripened off much too quickly, the effect of which is to sadly diminish their blooming capacity. If properly drained, water can scarcely be given them too frequently after the flower stems make their appearance, and up to the time when they begin to die away, after which the soil should be kept in a healthy, moist state till the leaves show symptons of ripening, when they may be slowly and gradually dried off. As the pots will now be well filled with roots, liquid manure will be of the greatest assistance to them, and this should be continued at alternate waterings till they have ceased blooming.

Ixias, Sparaxis, Babianas, &c.—For pot cultivation there are few bulbous plants more beautiful or generally useful than Ixias, Sparaxis, and Babianas, all of which are alike valuable either for greenhouse decoration or supplying cut flowers. Although perfectly distinct in appearance, they require the same treatment, and should be potted in rich, sandy soil, and kept close under cover of a cold frame or pit plunged in coal ashes, where all the attention they require till they get into leaf is to preserve them from from frost and vermin; 6-in. pots are quite large enough for them, and in these from six to twelve bulbs should be planted, according to the strength and size of the different varieties. If the soil be in a moderately moist condition as it should be at the time of potting, no water will be required till they have started well into growth, and even then it must be given but sparingly. All the above are nearly hardy, and any small bulbs there may be on hand can be planted on dry, sunny borders, in light, sandy soil, close under walls, and will be found most useful for cutting after those in pots in the greenhouse are over.

Bedding Plants.—Tubers of Dahlias and bulbs of Gladioli, &c., should be stored in convenient places beyond the reach of frost; and this should also be carefully excluded from structures containing bedding plants, which should always, if well rooted, be kept as cool and quiet as possible, as it is by no means advisable to encourage growth in the absence of light and air. Nothing, however, is so inimical to bedding plants at the present season as damp; every possible care, therefore, must be taken to prevent, as far as this can be done, drip from the roofs of such houses or pits which may contain them. All dead and decaying leaves, &c., must be removed whenever necessary, and every opportunity taken which the state of the weather may afford to admit fresh air, to render the plants as hardy as possible. There may also be found leisure now to take a rough estimate of the stock on hand of the various kinds of plants required for the ensuing season, and this should be compared with the list of requirements, which should have been made during the last summer or autumn; and whenever a deficiency is shown, a preparation for increasing such varieties should be made early during the ensuing year. But little, if any, advantage is likely to be gained by attempting to propagate bedding plants during the dull dark days of mid-winter. During dry or frosty weather, get, as soon as possible, a fertilising compost prepared, ready to be applied to the flower beds and borders as soon as the spring-flowering plants and bulbs are removed. It is necessary to enrich as much as possible the soil of such beds, to enable them to successfully produce two crops during each season; and it should also be borne in mind that many kinds of summer bedding plants are exceedingly gross feeders. This compost should be frequently turned during frosty weather; frost is of itself a powerful fertiliser, and fresh surfaces can hardly be too frequently exposed to its action.

Winter-resting Orchids.—There are few matters connected with the cultivation of Orchids in which beginnners in their growth are more liable to make mistakes than in their treatment when at rest. Even those who have had lengthened practice in the culture of Orchids, are continually experiencing difficulties in this respect through the influx of new species from different altitudes, and that grow naturally under conditions more or less different from those of the greater portion of the kinds in cultivation. The limited number of houses, or divisions of houses, that are at the disposal of most growers, which enable them to vary the temperature and regulate the state of the atmosphere, are far from being proportionate to the widely different conditions as respect warmth and moisture that the plants are found to exist in naturally during their season of rest; consequently it entails the necessity of giving what I may term a compromising sort of treatment as to both temperature and the state of the atmosphere in regard to moisture, to which the plants are perforce obliged to be made to submit, in the various compartments at command for their cultivation. To stop growth in such kinds as naturally rest during our winters, it is not only necessary to lower the temperature, but also to withhold moisture to a considerable extent from the atmosphere, and likewise to keep them more or less dry at the root, for, independent of the necessity, in the case of many species, for a prolonged rest to insure their flowering, it is requisite to take the means for securing such to maintain their proper period of growth, otherwise they would commence so far before their time, that the development of the season's growth would be completed whilst yet the weather was hot and the days long, thereby rendering it a difficult matter to submit them to the treatment essential to the cessation of growth that accompanies the resting process. Hence the obligation of withholding water from the roots, and it is on this point principally that a very considerable amount of knowledge and experience is required to vary this drying condition of the roots so as to meet the needs of the different families and individual species of families, for if we take, for instance, even a very limited number of the plants usually found occupying either the warmest or intermediate temperatures devoted to Orchids, it is found necessary to vary the drying conditions to which the roots are subjected in a marked degree, otherwise almost irreparable injury would be the result. I have often found an impression existing in the minds of many who have had some practice in the cultivation of Orchids, that a severe drying-up process was almost universally necessary to induce them to flower, than which no greater mistake can be committed, and I will here remark, as I have frequently done before when touching on this subject, that in all the different species of Orchids that require to be kept for a time, during their season of rest, dry at the root, their ability to benefit by this will not alone depend upon what they are subjected to in their native countries, but quite as much upon the condition under which they have been grown, not only during the last, but preceding seasons; for, acccording to the solidity and robust stout-textured state of the leaves and pseudo-bulbs, especially the leaves of such as are evergreen, will they bear any lengthened drying up of the roots without shrivelling to an extent that will cause premature destruction to a greater or less degree of the leaves. —T. Baines.

Flower Garden.

Planting new Hedges with various Materials.—The present is a good time for preparing the ground, and planting Beech, Privet, or Quick, and where such work has to be done no time should be lost in carrying it out. In the case of Holly, Yew, or any other evergreen, the planting should either have been done earlier in the autumn, or had better be deferred until spring. In the formation of a hedge, it frequently becomes a question of what to plant. There is nothing equal in appearance to green Holly, nor is there anything that makes a more impervious fence when it gets sufficiently large, if the land be dry, either naturally or made so by draining; even if of a poor sandy character, if plentifully manured, Holly will grow fast after the first or second year, when it has made plenty of roots and got established; White Thorn or Quick stands next in point of merit, where afforded similar treatment as to a dry bed and plenty of manure, but it does not make so much progress if the soil be too sandy. Beech will succeed in almost any place where there is no stagnant water, or the opposite extreme of being excessively dry; the worst of Beech in a garden is it causes a continual litter for some weeks in the spring, as when kept cut it does not shed its leaves in the autumn, although for shelter this is an advantage. For screens or divisional hedges such as those already alluded to, there are many plants that may be used; where an evergreen to grow up quickly is required, nothing surpasses the oval-leaved Privet (Ligustrum ovalifolium); it will grow doubly as fast as the old variety, and is stout enough to support itself against the strongest winds when allowed to grow to a height of 8 ft. or 9 ft., and kept cut into not more than 2½ ft. through at the base; whereas, the ordinary Privet would be useless so treated, unless some strong-growing plant, like Quick or Beech, were planted with it. The objection to common Privet is, that when used mixed, as at one time was customary, in winter one part of the hedge is green whilst the other is naked; but, for appearance, in screens of this kind Holly again has no equal. American or Chinese Arbor-vitæ, Cupressus Lawsoniana, and other kindred plants, make a screen at once, but have the fault of getting bare in time, unless allowed to extend to greater breadth than is often consistent with the purposes for which they are wanted. In all localities where they will grow freely, and can be permitted to attain a considerable breadth, and where there is no particular hurry in getting them to a good height in a short time, Rhododendrons are very suitable, and always look well; there are now almost unlimited quantities of seedlings little inferior for general effect to the named varieties that can be had cheap, and when in flower make a good display. Where not wanted to grow above 5 ft. in height, Pyrus japonica makes a good hedge, but it should not be trimmed in too closely; it is very effective when in bloom, especially if the blush and the crimson varieties be planted alternately.

Hardy Fruit.

Figs, except in the most favoured southern and western counties, or near the coast, should be loosened from the walls, the branches carefully drawn together with a piece of strong cord or stout straw ropes, and the whole covered with clean straw, encircling the branches thus bound together 5 in. or 6 in. in thickness, commencing near the bottom of the trees. Straw thus put on will not only protect from frost the young fruits that are formed, but will likewise throw off rain, for, should it become wet through to the branches, and afterwards get severely frozen, the trees would be in a worse condition than if no protecting material was used at all. To prevent the rain thus penetrating the straw to a depth that will do harm, the branches, when the covering is completed, should be placed in nearly an upright position. There are several advantages in getting pruning done early, especially in the case of such fruits as are grown on walls, the first of which is, that when completed it gives an opportunity for preparing the soil for whatever vegetable crops are grown on the borders. But, in digging the ground occupied by the roots of good fruitful trees, the fact should never be lost sight of, that the fruit should be the principal consideration, and that there should be no interference with the roots so as to injure them; for this reason the spade ought never to be used in digging fruit-borders; but the work should invariably be done with a fork instead, and even this should be used so as not to cause injury, especially to the small feeding roots that, in the case of trees in a good condition, usually lie near the surface. Where it is the intention to plant or remove Gooseberries and Currants the sooner such work is done now the better if the weather be mild, but do not plant anything when the ground is crusted with frost, as in the operation the frozen soil gets in contact with the roots, which is by no means calculated to benefit them; the ground should be well dug before it is planted, even if it has been under vegetable crops before. These fruits (except Black Currants, which like shade) are best grown on good open ground; they will, however, succeed between Apple and Pear trees, if the latter are not planted too closely. In such situations they frequently bear well when the crop in more open places gets cut off by spring frosts; the ground round these, and any trees that are newly planted, should be mulched as far as their roots extend with half-rotten manure. Raspberries should also be planted; for this fruit the ground should be well enriched by digging into it a good dressing of manure previous to planting; existing plantations of this fruit should be pruned and tied, and, where stakes are used, renewing such as are decayed; few crops require or will better pay for a liberal use of manure than Raspberries. Even old plantations of them that have become weak can frequently be brought round by enriching the ground and otherwise bestowing on them judicious cultivation. One of the principal things to be observed in the case of the Raspberry is never to use a spade amongst them; the greater portion of the roots lie near the surface, and if the spade be employed in digging quantities of them necessarily get injured; even fork culture should not be too deep. Strawberries should now be cleared of runners and the ground should be slightly forked over; these, like Raspberries, are surface rooters, and should never have the spade used among them. If the beds are getting old and the ground poor a dressing of manure may be forked in.

Kitchen Garden.

Vegetable Forcing.—Sow successions of French Beans once every six weeks in 8-in. pots half filled with rich soil, and keep them in the Pinery, early Vinery, or other forcing house at work. Earth up the plants before they come into flower, and syringe occasionally to keep them clean from red spider. Sow Mustard and Cress every week or ten days, as required, in any house having a temperature above 45°. Keep up a succession of Chervil by wintering some roots in pots or boxes in any of the forcing houses.

Endive, Lettuce, and Cauliflower.—Plants of these in frames and under handlights or cloches should now be well atended to, giving them plenty of air when the weather is mild, but guarding against their getting wet, as they are less likely to suffer from severe frost, when the soil in which they are growing is dry on the surface, than they otherwise would be. When frozen those in frames should have a mat thrown over the glass when the sun comes upon it, as the effects of being suddenly thawed are most disastrous. Handlights and cloches ought to be similarly protected on the south side by means of litter or evergreen branches stuck in the soil so as to screen the plants. Cauliflowers and Lettuces at the foot of south walls may be protected by placing boards before them in a slanting position, propped up so as not to allow them to touch the plants. Endive covered with boards for blanching should, during frosty weather, be completely covered over with several inches of litter, for, if frozen, it will decay. The boards previously recommended to be used in this way will be found much better than slates or tiles, both of which are sometimes employed for blanching it, as wood, being a non-conductor, will ward off frost when tiles or slates would admit it to spoil the Endive.

Protecting Celery.—Care should be taken that Celery is not subjected to much frost, or it will not keep so long, however firm and solid the variety may be; for covering material use Pea haulm, which, if put under cover when pulled up and kept dry until required, is very useful for such protecting purposes; if in a neighbourhood where it is plentiful, the common Brake is a good material, if not, stable litter may be used; but whatever is employed will be found much more effectual if not in absolute contact with the tops of the Celery. To prevent this, take some stout pieces of old Pea sticks and push them down in the rows betwixt the plants, then take some of the longest and straightest of the Pea sticks, or such as have been used for Runner Beans, and tie them lengthways to the upright sticks, a few inches above the tops of the Celery; on these place the litter or other material, letting it hang well over the sides like thatch; this will be the best way of protecting it from frost, and costs little more in additional labour than simply placing the material upon the tops of the Celery. Winter and spring Broccoli is frequently saved from being killed in severe frosts by the slight protection afforded by laying old Pea sticks down moderately close upon them, as these break the full force of the cutting frosty wind. During severe frosts, or when there is an appearance of snow, cover Parsley with shutters or boards, if no frames are at hand, not allowing the covering material to absolutely touch it.

Extracts from my Diary.

December 30.—Covering up Vine borders with long litter, using just sufficient to keep out frost. Planting border with Early Mazagan Beans. Pruning Mrs. Pince Vines. Turning over leaves and long manure for making hotbeds. Cutting all the Lady Downes Grapes with about 6 in. or 8 in. of wood attached to the bunches and putting them in bottles in the Grape room.

Dec. 31.—Sowing four rows of Sutton's Ringleader, four rows of William the First, one row of Dr. Hogg, and one row of Unique Peas. Preparing pit for Ash-leaved Kidney Potatoes, and turning out a crop that had been brought forward in pots. Washing the paint in one of the Vineries with soft soap and hot water. Glou Morceau, Ne Plus Meuris, and Easter Beurré Pears now plentiful and good.

January 1.—Potting off Tomato cuttings. Getting Strawberries plunged in leaves to start them. Tying pot Vines which have broken satisfactorily up to the wires. Spawning a new Mushroom bed and moulding it over 2 in. thick. Getting on with digging and trenching as fast as the weather will permit. Turning over a large heap of manure to rot, adding 20 lb. of salt and one bushel of soot to the load.

Jan. 2.—Sowing Cucumber and Melon seeds. Painting the Vines in one of the houses with composition and tying up the Vines, afterwards forking over the surface of the border lightly and giving it a little top-dressing. Looking over the Grapes in bottles, removing any bad berries, and filling up the bottles where required with water.

Jan. 3.—Getting 100 pots of French Beans in and earthing up a more forward lot; also a few pots of Potatoes. Covering up Endive and Lettuces to blanch. Getting manure on to the land whenever the weather is dry. Filling another four-light pit with leaves in which to plunge Strawberries.

Jan. 4.—Putting in cuttings of Chrysanthemums. Getting on with the pruning and nailing of Pears and Plums on walls. Manuring and forking the ground amongst Gooseberries and Currants. Emptying a four-light pit and refilling it with leaves and manure for early Melons. Examining fruit room, and removing any fruits that are beginning to rot. Cleaning kitchen garden walks. Fruit in use for dessert.—Pines, Grapes, Pears, Apples, and Nuts.—W. G. P., *Dorset.*

THE LIBRARY.

THE WILD SPORTS AND NATURAL HISTORY OF THE HIGHLANDS.*

Wild sports and wilder country are not within the ordinary range of our commentary, but the work above named is of a merit so exceptional and a charm so rare that we cannot forbear to say a few words in its praise. Depending solely upon its attraction as a book, it had already passed through several editions before the happy thought of calling the pencil to the aid of the pen came to the mind of its publisher. A more artistic rendering of the scenes and incidents which the author describes the pen could not well achieve; while the life-like portraits of the wild creatures, the pursuit of which has led Mr. St. John through so manny untrodden scenes of grandeur and beauty, are veritable triumphs of the pencil—a pencil guided by no unpractised hand. The engravings are the most delicate that we have seen for many a day. All who care about books would rejoice at the thought of such engraving being always available for the illustration of good books, Unhappily, of late years, our book engraving has been generally far from being either "fine" or artistic. The book is beautifully printed by Clarke, of Edinburgh, and is in all ways such as one expects from Albermarle Street.

Lovers of Orchids will be glad to know that the figures of Orchids prepared for the "Refugium Botanicum" will be published after a long delay. Indeed, one part, constituting Part II. of the second volume of the work named, has recently appeared, and contains figures of twenty-four new or little known species. Of course they can hardly be called new now, as most of them were drawn from living plants several years ago. Part I. of this volume, also wholly devoted to Orchids, as the complete volume will be, appeared in 1869, and the third and concluding part is promised shortly. The majority of the species represented in the part before us are what, for want of a more expressive phrase, is termed of botanical interest only, having small and inconspicuous flowers, although Trichopilia rostrata, Lycaste leucantha, Maxillaria nivalis, Zygopetalum rostratum, Chondrorhyncha fimbriata, and Stanhopea platyceras are attractive and ornamental Orchids.

Something to Look Forward to!—The Countess of Stradbrooke, in a recent number of "Vanity Fair," in discussing the affairs of the agricultural labourer, writes as follows:—"If every man who had passed an honest and good life in his parish, and had not received relief in his youth, on arriving at the age of three score and ten years, should receive without doubt or hesitation, as his right, a sort of pension, two shillings a week and a stone of flour weekly, in recognition of his past labours, for the rest of his life, the labourer would be a happy man."

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* "The Wild Sports and Natural History of the Highlands." By Charles St. John. London: John Murray, 1878.

THE FRUIT GARDEN.

FIGS AND FIG CULTURE.

Within the last twenty-five years there has been a great extension of Fig culture in gardens under glass, for it is only in favourable localities in the south that the Fig can be grown out-of-doors. Its culture is, however, far from being so common or so well understood as either the Vine or the Peach, though, as a dessert fruit, the Fig will certainly bear comparison with the Peach; besides, it is a more wholesome fruit, and is much appreciated at dessert. Had it been cultivated more extensively, we should, in all probability, have had a greater number of varieties to choose from. As it is, the list is a meagre one—that is, of sorts known and cultivated with us. A few new sorts have been added within recent years, but, with these exceptions, the choice is hardly more extensive than it was when Loudon wrote about fifty years ago. We rather suspect there are good varieties here and there in the country which are not generally known to cultivators. It is not so many years ago since the Raby Castle Fig was introduced to public notice; and it is a good, most prolific, and large variety, well adapted for forcing, bearing two or three crops in the season even more readily than the Brown Turkey. Then there is the Castle Kennedy, which is doubtless an old variety under a new name, as I do not think Mr. Fowler claims to give the history of it further than that he found it at Castle Kennedy when he went there; yet it was quite new to Fig growers in this country when it was sent out about twenty years ago, or less. There used to be a Fig grown—and it is grown yet, for anything we know—at Clumber, the Duke of Newcastle's, of the most delicious flavour we ever tasted, and also of good size. It was shown to us by Mr. Tegg when he was there, but was unfamiliar to us, and we know most of those in cultivation. The varieties recently added to our lists are Pregussata, Royal Vineyard, Grizzly Bourjassotte, Negro Largo, and Osborn's Prolific. The first and third sorts named are moderate bearers, and the fruit of medium size and excellent flavour. Grizzly Bourjassotte is much superior to the Brown Turkey in the last respect. Of the Royal Vineyard we cannot speak from experience. The Negro Largo promises, however, to be a very strong-growing and fruitful variety. We notice that young plants of it here, only potted in spring and not restricted at the root, are showing fruit freely. The plant is quite as strong a grower as the Castle Kennedy, and produces very large leaves—two certain signs of fruit, for which the Negro Largo has a reputation. We are assured by Messrs. Veitch that it is an excellent sort for pot culture. Among other varieties hardly known in this country, otherwise than by description as large and good, are the Black Genoa, Black Bourjassotte, Bordeaux, Large White Genoa—the description of which might stand for the Castle Kennedy—Violette Grosse, and the three Argenteuil sorts, Black Dauphine, Dauphine d'Argenteuil, and Violette Dauphine. Of course every Fig grower knows the Brown Turkey and the Brunswick. Without going particularly into the culture of the Fig here, we would just observe that we do not consider the pot and pinching system the way to secure the best results. It is no doubt the best plan in small houses or pits, or under early forcing; but large and fine fruit, or great and certain crops, can only be had from trees that are grown on freely, and from which one or at most two crops only are taken in the season. Many sorts, indeed, like the Castle Kennedy, will not submit to pot culture. They are almost barren under treatment that the Brown Turkey will bear with impunity, but will bear well if allowed to develop their branches naturally. We have known the Castle Kennedy to do grandly in an orchard house where it was planted out to grow in tree form. We should imagine that in large and lofty houses no one need have any difficulty in having plenty of Figs of good size and quality who will take a little care to keep the roots of the trees within bounds, and do no more to the tops in the way of pruning than thinning the branches out where too crowded.—"Field."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

A Few Good Apples.—This being a good time for planting, a select list of Apples that produce the best crops may not be unacceptable. Of dessert kinds we have had good crops of King of the Pippins, Ribston Pippin, Cox's Orange Pippin, Barcelona Pearmain, Golden Knob, Sturmer Pippin, Court of Wick, Blenheim Orange, Ashmead's Kernel, Gravenstein, Scarlet Nonpareil, Kerry Pippin, Court Pendu Plat, and Reinette du Canada. Of kitchen Apples our heaviest croppers have been Keswick Codlin, Cellini, Lord Suffield, Stone Apple or Loddington Seedling, Cox's Pomona, New Hawthornden, Winter Queening, Wellington, Beauty of Kent, Norfolk Beefing, Graham's Pyle Russet, Northern Greening, and French Crab. I may remark that Apple trees attain a great size in this neighbourhood, and that the majority of them are standards, which, in some cases, are alternated with closely-pruned, bush-trained trees. Fancy kinds of training and fancy sorts are not much sought after. The Loddington Seedling, or Stone Apple, has only recently been brought prominently into notice hereabouts, its unfailing crops and the ready sale that its fruit commands having made it a favourite. The original trees in an adjoining orchard have been celebrated for their produce for years. The Wellington is also thought highly of here, and the beautiful dessert Apple Golden Knob is a gem amongst Kentish Apples, lasting as it does in good condition until quite late in the spring.—J. G., *Linton, near Maidstone.*

The Black Hamburgh as a Late Grape.—Mr. Clayton (p. 558) attributes Mr. Stevens' success in growing the Black Hamburgh as a late Grape to the fact of the soil being on the red sandstone. At the time when the statement was made, I had 300 Bunches of Black Hamburgh still on the Vines in perfect condition. They were grown in an orchard house without heat. The Vines which produced them are planted in the natural soil of the district, which, like Trentham, must be favourable to the Black Hamburgh, *i.e.*, if Mr. Clayton be right in his supposition that the soil is the chief agent in the matter.—G. A. Passingham, *Milton, Cambridge.*

Permanent Copings and Insects on Wall Trees.—My experience is decidedly against the use of any kind of permanent coping for wall trees, as I find that trees planted under an overhanging roof of any kind, are very liable to the attacks of scale and similar pests, the presence of which more than outweighs the advantage derived from the protection given to the trees during the flowering season.—J. G.

Keeping Grapes.—I have to-day (December 21), filled our Grape room, and regret that it is not larger that we might harvest all, as, from past experience, I believe they keep best when cut thus early. Some two or three years ago circumstances over which I had no control prevented their being harvested till the sap had become active, and the consequence was that as soon as they were put in water many of the berries cracked, and the whole kept very badly. Last year they were cut about this date, and we had Lady Downes plump and fresh in the month of June.—W. Wildsmith, *Heckfield.*

Robert's Variety of Gros Guillaume Grape.—In a circular which I have received, it is asserted that the Gros Guillaume Grape growing at Charleville is a distinct variety from that generally cultivated. Being rather sceptical on this point, I, in common with many of the readers of The Garden, would like to know the origin of the Charleville variety. This the authors of the circular ought to have given, for if it really can be proved to be a distinct kind, it will doubtless be advantageous to them.—W. W.

Preserving Soft Fruit.—The following will be found to be a good way of preserving such fruits as Gooseberries, Cherries, Currants, Plums, Apricots, Damsons, and Peaches:—After filling the bottles with fruit, place them in a fish kettle in cold water, packed closely with soft hay to prevent them from shifting. After the fruit is cooked, take them out, fill them with boiling water and cork them at once, but not permanently; let them stand till cold, then uncork and fill up with salad oil; then cork and tie down tightly, and seal them closely. Treated in this way, the fruit will keep for years; in fact, I have known a Melon to have been over twenty years in the bottle, and taken out fresh. I may mention that the coarse wax should be used; have it boiling in a pan, and dip the bottles in till the corks are covered, which will take or three dippings at least. But, to be thoroughly successful, the fruit ought to be in the best possible condition, thoroughly sound, and only use one sort in a bottle; for instance, if two or more sorts of Gooseberries are used in one bottle they never keep satisfactorily.—"Journal of Horticulture."

A Fruit Lesson.—By the thoughtful courtesy of Mr. C. Downing (and the consent of the writer) we are permitted to print the following interesting and suggestive paragraphs of a private letter to Mr. Downing from Mr. J. L. Moultrie, Union Springs: "As you are a lover of good fruit, you will excuse my egotism in giving a few items of personal experience. The opinion was generally entertained by the people here that this locality was unsuited for the successful production of good fruit. My belief was that all that was necessary was to procure such varieties as were adapted to the soil and climate; so I planted the Taunton, Horse Apple, and a few other kinds, and of Pears the Bartlett, Duchesse d'Angoulême, &c., just inside the fence on the public highway. I did not expect these trees to benefit me, for I knew that travellers would pull the fruit. The result was as I expected—the sight of these trees laden with the handsome fruit had more influence in making my neighbours plant for themselves than all I could have written in ten years.—"New York Tribune."

ICE HOUSES.

Fig. 1 represents an ice house belonging to Mr. D. G. Mitchell, made picturesque by the roof and ends being of rough slabs. The main part of the ice room is below the surface of the ground, and it may be constructed of stones or timber. An ice house like this, or even one of greater pretensions, may have its appearance improved by the free use of climbers; these answer not only as an embellishment, but serve a useful end in breaking the force of the sun's rays and keeping the building much cooler than it would be under full exposure.

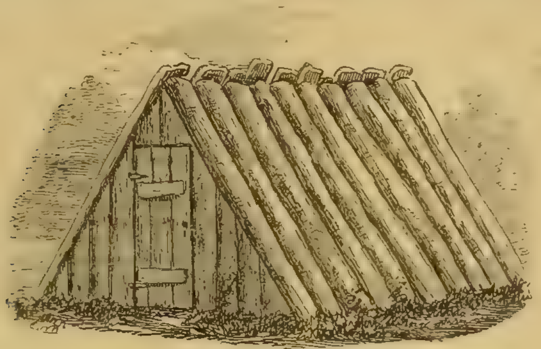

Fig. 1.—Rustic Ice House.

Fig. 2 illustrates an ice house that can be quickly erected at a very slight outlay for materials, and at the cost of only a few hours' labour. The size is determined by the length of the planks or boards to be used. Nine posts, rough sawn or hewn, of suitable height are provided, and two put up at each corner, as in fig. 2, resting upon a block of wood or a stone, or set in the ground. At one side of the front the ninth post is placed to serve as one side of the door, the bottom planks all around are nailed to the posts, which may be more firmly secured in place by cleats connecting those at each corner; the front posts are 1 ft. or so longer than the others to permit of a shed roof. A plate of light scantling secures the top in its place. Now it is ready for the ice. First, put on the ground a layer of sawdust, shavings, or cut hay, so that it will be at least 6 in. deep when firmly packed down. Then put in the first tier of ice, keeping the blocks 1 ft. away from the plank wall; fill the space solidly with the sawdust or other packing material (*a* fig. 3); then the second tier of ice. Next put in position more planks and so on, until the house is filled, storing the ice and carrying up the wall together, and filling in between with sawdust, &c., as the work progresses. The planks need only be slightly nailed to keep them up when the ice is removed, as they will be held in position by the posts without and the pressure from within. A door (*b*) is made by simply using two lengths of plank on the front side, as indicated by the posts in fig. 3. When the house is full a thick layer of the packing material is also put on top of the ice. Drainage is secured by placing the structure on sloping ground. A roof of slabs, thatch, or anything to keep out rain is sufficient.—"American Agriculturist."

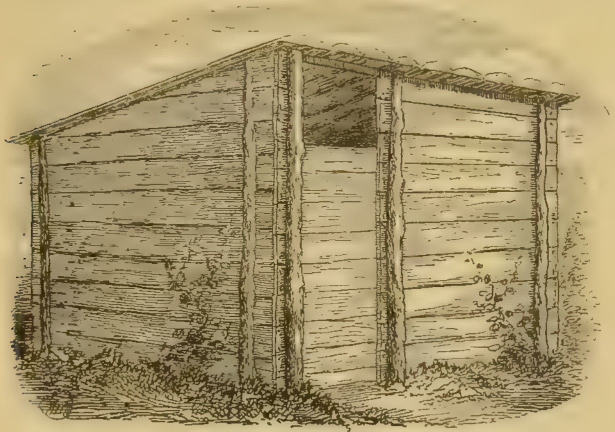

Fig. 2.—Cheap Ice House.

—— The simplest and readiest made forms of ice houses are square, beginning small at the bottom and gradually increasing in size to the top where the spring of the arch commences. One of the size of from 6 ft. to 8 ft. at the bottom to 12 ft. or so above, and 14 ft. or 15 ft. deep would, if the ice be well stored and properly broken, afford an ample supply for any ordinary establishment. Ice houses are usually made egg-shaped, with the small end downwards, but there is no particular advantage in that form, and one thing against such houses is that they are more difficult and expensive to make. A square answers all purposes equally well, if made in the way just named, as all that is required is that the ice as it melts can gradually sink and press tightly against the lining of straw provided as a packing to keep away the air. If the situation where the house is to be built be wet, the bricks should be bedded in cement to prevent any drainage from the land getting through the joints; and, to take away the water that flows from the melting ice, an efficient drain must be provided leading to the bottom in such a way that no air can pass in, or it will cause much waste. In forming an ice house the great thing is to keep as much of it below the general level as the nature of the ground will admit, for this reason, when carting and storing the ice there is not a tithe of the labour required to get it in in a well-like receptacle as there is when it has to be lifted and thrown up with shovels. To aid the filling, the passage communicating with the house should be made to slope inwards, along which the ice will slide with a push, and its own impetus and weight will cause it to run together in a solid mass, if well broken at the time of filling. I always find this is much better and more quickly done as it is thrown into the carts; by doing so, each holds more, and in that way a saving is effected. From 2 ft. to 3 ft. of earth on the top of the arch is quite sufficient to keep out the heat and support common Laurel or evergreen Oak, either of which forms a dense shade; but if, in addition to these a few Firs or other tall-growing trees be planted on the sunny side, or the house made so as to have the shelter of some already established, it will be all the better. S. D.

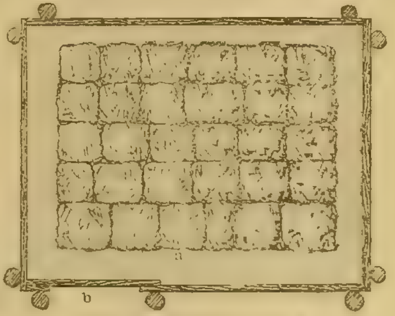

Fig. 3.—Ground Plan of Fig. 2.

Roffia Grass.—This Grass has of late become so popular for garden uses that the demand for it greatly exceeds the supply, and it has risen in price from about 8d. to 2s. per lb. On its first introduction there were great prejudices displayed against it; but its many excellences—softness of texture, toughness, adaptability for the finest work, and absence of waste—made its use universal, and hence its present high price. Immense demands have been made upon it for the tying of Violets, Wallflowers, and other bunch market flowers, but if its cost increases so rapidly market growers will have again to revert to the Russian bast mats. It is somewhat singular that through all the many years that Russian mats have been used and cut up for tying purposes it should not have occurred to any one to import the bast in its ordinary form in quantity.—A. D.

The Weather in Nottinghamshire.—The frost during the past week has been at times very severe. On the 12th we had 15° of frost, and on the 15th 19° were registered here. Severe frost also still continues; this morning (the 23rd) 12° were registered, with the barometer rising, so that it is likely to continue. We have a long south wall here, protected with Rendle's new system of glazing, and the severe frost of the last week or two seems to have had no effect, through contraction, of causing any breakage in the panes. I believe it will be found in hothouses, or in glass-covered walls, glazed on this system, that the glass is quite safe from the contraction or expansion of the rafters, if of iron, in all kind of weathers. Another great advantage is the freedom from drip, if the squares are properly placed and fastened according to the directions of the patentee. In the strongest gales of wind the glass-covered wall here has stood their fury without any of the panes being shifted.—W. Tillery, *Welbeck.*

ANSWERS TO CORRESPONDENTS.

Stocks for Vines.—"M. J. B." (p. 573) may graft Alicantes on Lady Downes without any fear of unsatisfactory results. I grafted a house of Lady Downes with Alicantes five years ago, and, on comparing its contents with those of another house of Alicantes on their own roots, I find that those grafted on the Lady Downes are fully the best.—J. Smith, *Waterdale.*

Winter Coverings for Ferns.—I would recommend "A. H. M." (p. 573) to use Cocoa-nut fibre refuse in lieu of sawdust for covering his Ferns; the latter soon gets sodden and generates fungi, but the former never, and it is equally efficient as a protector.—W. W.

Ferns Suitable for a Cool Conservatory.—It is very evident from the description Mr. Champ now gives (p. 550) of his conservatory, and the space he has in it, that many of the Ferns, the names of which I gave, would be unsuited to his purpose. I now give an amended list of varieties, none of which will, I think, grow too large for him, viz., Cyrtonium falcatum, Lomaria chilensis, L. magellanica, Asplenium oxyphyllum, A. lucidum, Davallia canariensis, D. novæ-zealandiæ, Lastrea opaca, L. Standishi, Onychium lucidum, Phlebodium Bellardieri, P. areolatum, Polystichum flexum, Pteris cretica albo-lineata, and Platycerium alcicorne. The above are all fine distinct kinds, that will stand the temperature of an unheated structure well, and always have a bright cheerful-looking appearance.—S. D.

—— Phymatodes vulgaris, a handsome Fern with dark green leathery fronds succeeds remarkably well in a cold greenhouse. Being somewhat slow in growth, it is suited to a small house.—K. L. D., *Ashmore.*

Leaf Cuttings of Tuberous-rooted Begonias.—In reply to "T. B." (p. 573), allow me to say that the method which I adopt in preparing leaf cuttings of these Begonias is not, as he supposes, cutting off the leafstalk with an eye at the base, but simply leaving about two-thirds of the stalk adhering to the leaf, and inserting the same in the soil, leaving the whole of the leaf exposed on the surface. As regards his second query, will they not be worthless for another year? I beg to remind him that the two cases from which he draws his conclusions are different. Cuttings made from flowering shoots generally produce blind tubers, but not always, while leaf cuttings form not only a tuber, but eyes, a fact which I have proved, and I have no hesitation in recommending "T. B." to give the method a fair trial.—A. Hossack.

Calanthes in Small Pans.—In The Garden (p. 410), the advantage of growing Calanthes in small pans is alluded to. As everyone interested in the growth of Orchids will be anxious to carry out any plan proved to be successful by such highly skilful growers as Messrs. Veitch, perhaps you will say how many bulbs should be put in a 5-in. pan, whether or not the usual compost is used, whether little or any drainage is put in so shallow a pan as 1½ in., and whether the strong-growing C. Veitchi will succeed in a pan as well as C. vestita? As Pleiones are also surface-rooting plants, would not the same plan answer for them?—C. B. P. [The Calanthes in question are placed in the pans in March and started into growth. They are kept near the glass and receive abundance of water all through the growing season. A little piece of hollow crock is placed on each of the four holes in the bottom of the pan, which is filled with turfy loam, peat, broken crocks, and silver sand. All kinds of Calanthes do equally well under these conditions. Messrs. Veitch also grow Dendrobiums, Sophronitis grandiflora, Indian Crocuses (Pleiones), and many other surface-rooting Orchids in this way with the greatest success.—S.]

Binding Compositions (p. 550).—No mixture of chalk and sand, or any other materials of that nature, are of any use to form a perpendicular bank 8 ft. or 10 ft. high, for, however well and firmly they may be compressed together, they are sure to crumble down from the action of the weather. If your correspondent resides in the neighbourhood of large ironworks or a dockyard, he will be able to obtain plenty of clinkers or huge burrs for the carting, and these roughly cemented together, with cavities left between so as to admit of planting Ferns, if the face of the bank is shady, might be made exceedingly ornamental. With a southern or any other aspect hosts of things would be just at home, especially any of a succulent nature, such as Mesembryanthemums, Portulacas, and others of that class, that would droop over the rock and be quite a blaze of bloom in the sun. Tropæolums, too, Ivy-leaved Pelargoniums, the lovely trailing Lithospermum prostratum, Sedums, Daphne Cneorum, Aubrietias, Vittadenia triloba, and others of a similar character, would be quite a feature, and associate well with the foregoing. To give any, or the whole, of these a better chance of getting sufficient moisture, instead of the bank being perpendicular it should gradually fall back from the bottom, so that any rain that falls may soak into the soil for the benefit of the plants. If the bank is wanted as a barrier against cattle or as a boundary, and its ornamental appearance is not a consideration, the cheapest thing to do with it is to form a concrete facing 1 ft. or so thick, which, if well done, is equal to a brick wall for durability, and answers all purposes as a means of protection. Small stones, sifted free from gravel, are the best material to make it of, and if these are mixed with about one-tenth of their bulk with good Portland cement, and gradually sprinkled with water while doing so, the mass will set as hard as a rock. The proper way to make a wall with this material is to have stout, smooth planks that can be bolted together so as to leave a cavity between the width the concrete is wanted, into which cavity it should be thrown in quickly that the whole may set together at one time without showing a joint. So strong and durable are walls made in this manner that hereabouts, near the sea coast, where shingle is plentiful, houses are built with concrete and faced with cement after, which is marked out to look like blocks, and a great advantage, besides their cheapness, is that they are impervious to damp, which cannot be said of bricks such as we see turned out now-a-days. Ivy clings tenaciously to the concrete when left rough and unfaced, and your correspondent may therefore quickly cover any he puts up with this evergreen, which at all seasons has a pleasing and cheerful appearance, and more particularly if a few of the variegated varieties are used to mix with it.—S. D.

Names of Plants.—*W. E. P.*—1. Sericographis Ghiesbreghtiana; 2, Libonia floribunda; 3. Goldfussia isophylla; 4. Gymnogramma Massoni; 5. Coccoloba platyclada.

Books.—*Alpine*—Hoppus' "Tree Measurer."

Questions.

Nettles Under Trees.—I have many acres of Nettles growing under large trees. Can any of your readers tell me the best way of getting rid of them?—E. F.

Substitute for Asphalte.—Can any of your correspondents kindly tell me of an easy and inexpensive way of laying garden paths with coal tar and other materials as a cheap and durable substitute for asphalte? We are very badly off here for good gravel, and, as my house is in a dip, my paths retain the moisture.—H. M.

The Mountain Avens.—Is not "W." wrong (p. 562) in calling the Mountain Avens a Geum? The true Mountain Avens is Dryas octopetala a British species with white flowers to be found in the north and in Wales and Ireland. It grows here freely on rockwork, but does not flower profusely.—J. R. Droop, *Stamford Hill.*

Brown Cos Lettuces.—Where salads are required in winter these Lettuces are invaluable, as they are of such a hardy character that in ordinary winters one may insure a supply by utilising sheltered positions for late crops, which continue to grow, except during very severe weather; and if the means of affording protection be at hand, they retain their flavour better than plants lifted and stored in a close atmosphere. Dry Fern fronds are perhaps the best possible covering which can be given them, as they exclude frost without altogether depriving the plants of air.—J. Groom, *Linton, near Maidstone.*

Rose-coloured Water Lily.—In the province of Nerike, in Sweden, there grows a lovely rose-coloured variety of our common Water Lily (Nymphæa alba). The outer petals of the Lily are rosy-red and the inner petals carmine-red. From what Dr. Fries, of Upsala, told me, it is chiefly to be seen in a sheet of water in the province of Nerike, where it flowers year after year. I first saw it in the Botanical Gardens at Christiana, and on inquiry I learned from Professor Schübeler that it had come originally from Nerike. Nothing, save the colour, shows any variation from the normal condition of our Water Lily. What agency, chemical or otherwise, can have brought about the change it may be difficult to conceive. The colour is fixed and permanent, even after transplantation. Transmutation of colour from blue to pink and from pink to white is not very unfrequent in our native vegetation, but reversion from white to pink is assuredly rare and difficult of explanation. The cups, as I saw them, were large and well expanded, and in colour they had the appearance of a fine full rose on the water rather than of a Lily.—Peter Inchbald, *Hovingham Lodge, York.*

The Willow and Malaria.—The cultivation of the Willow is, in your issue of October 25, recommended by one of your correspondents for districts affected with malaria. His statements on the subject being fully borne out by my own experience in the well-known malaria regions about Ephesus, I beg, through your columns, to call thereto the attention of the authorities in Cyprus. Before the Eucalyptus was ever heard of in Asia Minor, I had seen the bark of the Willow used as a febrifuge. I had remarked the easy and inexpensive reproduction of this tree, its quick growth in damp places, its excellent qualities for fuel and for agricultural implements, and its great advantages for strengthening the banks of capricious streams, and had thence taken every opportunity after the winter floods to stick Willow cuttings along the banks of streams and in other damp places in my property; also to scatter Plane tree seeds in marshy spots. The result has been that, whereas twenty years ago the full-grown trees in this neighbourhood might have been counted, a luxurious growth of Willows and Plane trees marks my place, fuel is abundant, fever is steadily decreasing, the meandering propensities of the streams are checked, my neighbours have to come to me for agricultural implements, and I have not far to go for timber for rough purposes.—Chr. D. Van Lennep, Swedish Consul, *Mahazik, near Smyrna,* in "Times." [The above is interesting as showing that other free-growing trees that are hardy are as useful as the Eucalyptus, which is not hardy.]

Notice to Correspondents.—Many communications are unavoidably left over this week.

NOTES OF THE WEEK

Gardening in Winter at Vienna.—At present the winter here is very severe, the thermometer sometimes being down to 0° Fahrenheit. Garden work out-of-doors is at a standstill. We could not open some of our cold frames for a week on account of the snow and cold. We grow here great numbers of Russian Violets in frames during the winter on purpose to have them in flower from November to March; some notes about their cultivation I shall have much pleasure in sending you hereafter. I also hope to send you a few remarks concerning our spring bedding out with perennial plants. We use different kinds of Wallflower, Myosotis, Silene, Iberis, Aubrietia, Antirrhinum, and Delphinium, with the view of having plenty of flowers from April, to the end of May. About this time of the year, when the earth is frozen hard, we transplant large specimen Conifers with good balls; the soil round the trees is taken out, leaving round the stem a ball of several feet in diameter, which, in a day or two becomes frozen so hard that in transplanting there is no fear of breaking it.—LOUIS JEROPATSCH, *Imperial Gardens, Laxenbourg.*

New Amaryllises.—There will shortly be a good display of these in Mr. Ley's nursery, Croydon. The bulbs were imported from Peru. Numbers of them are throwing up flower spikes, and it may be reasonably hoped that some improved kinds will be found among them.

Sophronitis grandiflora.—This charming winter-flowering Orchid appears to be becoming plentiful, judging by the large importations of it which have recently been made. The back of one of the houses in Mr. Ley's nursery, Croydon, is furnished with neat little plants of it fastened on small pieces of wood. These are being grown on for flowering next winter. Considering how easy this plant may be cultivated, and in almost any way, either in pans, pots, baskets, or on blocks of wood or cork, it can hardly be too plentiful.

Plants in Bloom at Christmas.—It may be interesting to know what plants I have in flower at the present time for Christmas decoration. They consist of Lilies of the Valley in quantity, double Poinsettias, as well as some 600 of the old variety enlivened by a few plants of the white kind, Euphorbia jacquiniæflora, Arum Lilies (Callas), Roman Hyacinths, Van Thol Tulips, Eucharis amazonica and candida, white and red Azaleas, Lapageria alba, Bouvardias, Camellias, Persian Lilacs, and Chrysanthemums.—H. VERTIGANS, *Chad Valley Nurseries, Birmingham.*

Musa Ensete in the Conservatory.—This noble plant is not so often grown in the conservatory as it probably would be, were it not that it is generally understood that it requires more heat than can, as a rule, be afforded in such a structure. This, however, is a mistaken notion, in proof of which we have only to allude to the fine specimen of this Musa in the large conservatory in Messrs. Henderson's nursery at Pine-apple Place. The plant in question was planted out from a pot two years ago last autumn, when it was about 4 ft. or 5 ft. high. The house is never kept warmer than is necessary to effectually exclude frost and expel damp, and yet this plant thrives admirably. Its dimensions at the present time are as follows: height, 25 ft.; circumference of stem at its base, 5½ ft.; circumference of stem at the part from which the leaves issue, 3 ft.; length of stem, 6 ft. 3 in. The number of leaves is fourteen, each of which is 13½ ft. long and 3 ft. wide. It is a noble specimen, and forms a striking object associated with finely-grown examples of various kinds of Araucarias, large spreading Palms, massive Cordylines, variegated New Zealand Flax, Camellias, and similar plants.

Orchid House and Fernery Combined.—One of the most attractive and interesting Orchid houses which we have seen, is that belonging to Mr. Philbrick, Regent's Park. It is a low lean-to, in which the pathway is sunk several feet below the ground level. The back wall, which is covered with virgin cork, is literally clothed with Ferns, Club Mosses, green trailing Tradescantia, and similar plants. A pathway runs through the centre of the house, formed of red bricks laid loosely so that water may stand in the apertures and give off moisture. The walls on each side which support the stages are also covered with Ferns, Grasses, and Mosses, and on the back stage, here and there, straight lines are broken by means of rustic work formed of cork and clothed with Ferns. A glass case for Todeas in one corner also gives an additional interest to the house, which at present contains a few pansful of Sophronitis grandiflora, growing on arch-shaped pieces of cork from 12 in. to 18 in. long, and from 9 in. to 12 in. wide. The plants of Sophronitis are dotted about on the cork when very small, but by good culture they rapidly increase, and at the present time one piece of cork covered with plants bears forty fully expanded brilliant scarlet blossoms, and there are many buds yet to open. These being suspended from the roof, among the graceful fronds of Ferns, and associated with large, arching, finely-flowered spikes of Odontoglossum, a really fine effect is produced—a much better one, indeed, than that often found in more pretentious houses.

Tillandsia zebrina at Anerley.—Plants of this Tillandsia will shortly form a striking feature in Mr. Wills' nursery, Anerley. They are grown in 6-in. pots, and each plant is furnished with large, broad, zebra-marked leaves, and fine, long, sword-like spikes of brilliant blossoms. In the conservatory or dwelling house at this season of the year such plants would have a fine effect, and on that account they might well be grown more extensively than they are in private gardens.

Fine-leaved Plants in Winter.—The large collection of these in Mr. Wills' nursery at Anerley serves to show what excellent effects may be produced in winter by means of such materials alone. Here we find whole houses full of finely-grown Crotons representing nearly every possible shade of colour; Dracænas, with which several houses are packed, possess sparkling tints of crimson, rose, salmon, scarlet, and purple, whilst to white-edged sorts several new kinds have been added. Variegated Pines, fine specimens of Yucca filamentosa variegata, together with Pitcher Plants, Palms, and many other interesting plants render a visit to this nursery at any time of the year highly interesting.

HORTICULTURE AT THE PARIS EXHIBITION AND ABOUT PARIS.

AT the Exhibition nothing struck one more than the Grass lawn in front of the Trocadero. It surpassed anything of the kind I ever saw; the purity of the Grasses and the density and greenness of the sward were marvellous, yet it was only laid down from seed last spring, though one would imagine it had been laid down for years. Carter, Sutton, and Webb—all English houses—supplied the seeds for the whole, or nearly the whole, of the grounds, and I noticed that one of these firms had used a good proportion of Clover among their seeds, which greatly improved the appearance of the sward, making it both much denser and greener. There can be little doubt about the advantage of using a goodly proportion of Clover in laying down lawns from seed. On some soils the plant can only be retained with difficulty for any length of time, while in others it grows spontaneously, on the red sandstone particularly, and forms the best part of the sward. The Trocadero grounds were worth going a long way to look at if for no more than just to see what can be done in so short a time by using good seed, and plenty of it, and high culture. It appeared as if the Grass had been richly dressed at intervals, and the frequent clippings of the machine had been left as a mulching, which, no doubt, protected it considerably, while the bottom was thin and exposed to the hot, dry sunshine. Cultivators generally prefer to lay down lawns with turf at once, which is certainly the speediest plan, but it is not the way to get a fine sward, which can only be secured by preparing and cleaning the ground thoroughly, and sowing seed, taking care to procure the latter from a good source, for all samples are not alike pure and clean. There was one piece of Grass in front of the Trocadero that formed a contrast to the others by its coarseness. The mistake generally made in laying down lawns is that the ground is not enriched enough, nor enough of seed used. Without attempting to criticise the laying out of the Trocadero grounds, which are undulating, sloping down to the river Seine, we may state that they were planted with considerable taste, and not overladen with flowers or flower beds. The shining, white limestone of which the Trocadero Palace is built, as, indeed, all the city of Paris is, could not have been better relieved than by an open expanse of fresh, green Grass, and this the artist seemed to have realised. Standing in front of the Palace, and looking away over the Exhibition proper, and the city beyond spread out before one like a vast panorama, the eye fell back with a sense of relief upon the fresh green lawn beneath. The bit of ornamental gardening just immediately in front of the Trocadero, on each side of the cascade after the Versailles style, is worth alluding to. This consisted of two panels, perhaps some 60 or 80 yards long and less than half as wide. In ninety-nine cases in a hundred such a tempting piece of ground would, in England, have been filled in with a number of flower beds, and so frittered away to a considerable extent, but in this case that mistake was avoided.

A border of mixed bedding plants, annuals, perennials, and sub-tropical plants, with a goodly sprinkling of the inevitable Paris Daisy, ran round each panel a few feet from the gravel, and the centre was left quite vacant—a panel of green Grass only, about the size of a small bowling green, without a speck of colour upon it; and one sees, considering the circumstances, that this arrangement was the best that could have been adopted. We thought, at least, that the panel of beautiful green Grass, so intensely green, was more effective than any arrangement of flower beds could have been. "How beautiful the Grass looks!" was an exclamation often heard from spectators who were constantly promenading the corridors of the Trocadero. The narrow flower border before mentioned was very effectively planted, and the narrow and very exactly kept line of Pyrethrum Golden Feather, which ran round the border, gave just the necessary finish to the picture. I saw a similar arrangement elsewhere in Paris in some of the gardens and small squares. There was no carpet bedding in the Exposition grounds so well done, after its style, as that in Hyde Park, but some of the groups of miscellaneous bedding was very effective. The beds of China Asters were grand, and we saw them planting these out at the fortnightly exhibit in full flower—grand plants 12 in. or 15 in. high, with flowers about 6 in. across. They appeared to have been raised in sharp soil, and were not put out of pots, but had been lifted from the ground, and had only small balls of soil to them, but plenty of roots. I found out afterwards that the fine pot plants of Asters I saw in the markets, and in the shop windows had been similarly prepared, and they looked perfectly fresh. Two or three colours were put in a pot. They make gay window plants, and large quantities are sold. The Zinnias, too, were really magnificent, and were permanently planted; but the most effective, and, to us, novel beds in the grounds were the Celosias, a crimson kind, in habit like Celosia aurea, but much dwarfer. They were put out in pots, and each plant was a beautiful little specimen, about 12 in. high and as much through, and extraordinarily well flowered. They would have been considered grand objects for conservatory decoration in England, and I do not remember ever to have seen such shapely and dwarf specimens, those grown in English gardens being generally rather leggy. The Coleus Verschaffelti is much used as a bedding plant in and about Paris, and grows in the most rampant fashion. The growth of this plant alone exhibits the difference of climate between Paris and London. In Hyde Park this summer the Coleus has done well, but the plants were stunted and dwarf compared with those in Paris, which looked more like stove-grown specimens, only that the colour of the foliage was more intense than one ever sees it in a stove in this country. In a mixed bed which we saw in front of Rose Charmeux's house at Thomery, the Coleus threatened to overtop everything else. In the Exposition grounds there were also grand beds of Begonias of the Sedeni and Veitchi types, and some of the common kinds were bedded out extensively and were growing like weeds. Next to the lawn, however, the trees, deciduous and evergreen, planted around the Trocadero attracted most attention. There were many species, all planted in spring, I believe, and all growing luxuriantly. Every tree must have been planted with great care. The rockeries which skirted the grounds in some places and shut out undesirable prospects were wonderfully well furnished, considering the short time, and great pains had been taken to encourage the Ivy to grow over the rocks, and well it had responded to generous treatment. Altogether, the gardening round the Trocadero Palace and on the opposite side of the Seine beyond was a wonderfully successful effort, and we felt sorry that the call upon our time in other respects allowed us little more than time just to race through the grounds; hence our meagre and but half-digested observations on some topics. Among peculiar exhibits which we saw in the Exhibition may be mentioned the dwarfed, if ancient, specimens of trees and plants from Japan. At first sight, to an English gardener, these looked the most miserable rubbish that one ever cast eyes upon; and although one, on looking a little more closely at such examples of prolonged starvation, may come to regard them as physiological curiosities, we cannot indulge in any very complimentary reflections on horticulturists who have spent generations in cultivating such idiotic productions. None of the specimens could be said to be healthy; they were stunted and miserable-looking in the extreme, at the very last gasp of existence, in fact. There was one venerable Cycas revoluta which may be taken as an example of the lot. It had a stem, which, judging from its height, girth, and wrinkled look, may have been centuries old. From this gnarled trunk protruded an abortive attempt at growth in the shape of about three fronds 4 in. or 5 in. long, proportionately broad, and of a sickly yellow colour. The soil in the pot seemed to have been squeezed out in the course of time during which this ancestral specimen had been growing and increasing in girth, and when we saw it it looked as if it would soon be subsisting on nothing but the pot. I left this exhibition soon, and felt no desire to go back again.

Among horticultural buildings and appliances there was nothing very remarkable. All the plant houses requiring shade were shaded on the French plan, that is, by a kind of light Venetian blind. This is made of thin laths strung together, about ¼ in. apart and painted green, and the blind is rolled or pulled up and down by cords. In some cases they are used inside, but generally on the outside of the roof, and make an excellent and not too dense a shade. I am inclined to entertain a good opinion of this method of shading, though Mr. Stanton, of Park Place, assured me that he had tried the plan, but found the blinds exceedingly troublesome and very inconvenient to work when used inside, which I could well believe. French horticulturists, however, seem to get on with them well enough. I rather liked, too, the light copper pipes with which some of the houses were heated. They were thin and light, and equal in capacity to our 4-in. iron pipes, but not nearly so heavy and clumsy. They are more expensive than iron pipes, but not proportionately so, owing to their thinness and lightness, and they are very durable. Numbers of copper boilers of various shapes and sizes for heating by hot water were also exhibited, but all, without exception, were inferior in design to those supplied by English makers at home. J. S. W.

END OF VOL. XIV.